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MEDICAL ASPECTS OF THE ATOMIC BOMBINGS*

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The photographs referred to in the following article cannot be reprinted here owing to Government regulations. However, the accurate and vivid description of them as given by Doctor Warren has prompted the publishing of this address as it was originally presented.

The Editors

MR. PRESIDENT and members of the Providence Medical Society, it is a very real pleasure to me to be able to speak to a medical audience about the problems that atomic energy are bringing to the medical profession.

These problems fall into two groups. First, what does atomic energy offer as a tool for research, and second, what does atomic energy offer as a hazard for humanity as a whole. First, from the standpoint of what this new tool in medical research offers to us; —So far as therapy by means of atomic energy is concerned there have been no particularly striking developments. The utilization of the temporarily active isotopes of which phosphorus, iodine and sodium have had the major experimental use, indicates that certain of these offer advantages that surpass the standard type of radiation therapy. But on the whole they do not offer anything in a startling way beyond that of the usual types of radiation therapy and in many ways they do not have any superiority over them.

Their chief value from the standpoint of medical research lies in their use as tracer compounds. The advantage of a radioactive isotope is that such an

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isotope can be utilized from the chemical standpoint exactly as any chemical can be. Thus radioactive phosphorus is no different in its reactions and its behavior from ordinary phosphorus. Radioactive iron is identical in its chemical reactions and its metabolism in the body with ordinary iron. But owing to their radioactivity, they carry with them a tag, a signal which makes it possible to trace them. For example, we can spot radioactive phosphorus down to ten to the minus fourteenth gram, that is, one millionth of one millionth of a gram, which is almost a matter of one or two molecules of the material. This means that we have been able and are actively following at the present time all sorts of experimental observations as to what goes on in the body under varying conditions.

As a minor illustration I might mention some of the work that Dr. Root did at our own hospital on the problem of resistance to insulin which is familiar to a number of you. The problem came about as to how many cases of so-called insulin resistance were really true resistance to insulin and how many were due to poor absorption of insulin. By the use of radioactive isotopes of zinc instead of ordinary zinc in the zinc insulin it is possible to follow the insulin molecule once injected in the body and see what happens to it. In a number of these insulin resistant cases it was found that the zinc insulin when injected into the tissues became imbedded in local scar tissue and the reason that the patient was apparently insulin resistant was that the radioactive insulin did not get beyond the initial site. Now this could not be worked out satisfactorily by any other method that we have at the present time. Similarly Dr. Hastings in the Department of Biochemistry at Harvard Medical is working out some quite revolutionary concepts in carbohydrate metabolism as a result of the ability to trace the atoms of carbon in the process of carbohydrate

continued on next page

metabolism and see where each goes, what happens to it in the course of utilization of the material.

The surface has only been scratched in this type of investigation and I am rather inclined to think that our major advances as a result of the use of nuclear energy will lie in this field as a tool for research, a tracer tool, rather than in the therapy that may be offered. The therapy is useful in a limited field but the research which may be carried on with these radioactive isotopes is practically without limit in its scope.

Now from the second standpoint—what have we got to expect? What are the dangers in the widespread, peacetime use of atomic energy? What are the dangers in its use as a weapon of warfare? Here the danger is essentially that of ionizing radiations. The thing that sets an atomic bomb apart from the blockbusters, the thing that made the difference at Hiroshima and Nagasaki from the bombings at Yokohama, at Tokyo, at Hamburg or in the Rhur, is the fact that not only have we here an explosive force but in addition we have a source of radiant energy almost beyond conception.

This radiant energy falls into two types. First, thermal radiation, a heat surpassing the heat of the sun, and second, ionizing radiation, coming both from the immediate flash of the bomb where there is a flux of neutrons and of gamma radiation ranging all the way from the equivalent of x-rays produced say at fifteen million volts down to those produced at a matter of a hundred thousand volts or more and from the residual radiation from fission. As you know at Hiroshima and Nagasaki the bomb was so regulated that there was no residual effect of any significance. In the first Bikini Bomb radioactivity was a minor factor. As a result of the second bomb there is still a dangerous degree of radioactivity on some of the target ships. I saw the other day a photograph made from a fish, an autoroentgenogram, so to speak, where the fish had been caught, laid down on a piece of paper with sensitive film on the other side of it. A very accurate photograph of the fish was taken by virtue of its own radioactivity.

Now our task at the investigations in Japan and at Bikini was to endeavor to find out as much as we could about the medical and the biologic effects entailed. In Japan we were very fortunate in having the cooperation of the Manhattan District Group under Colonel Stafford Warren whom some of you have heard speak, undoubtedly, and also of the army group under Colonel Oughterson whom some of you may have heard at the New England Surgical Society. We pooled our resources and by virtue of that pooling in Japan we were able to hospitalize about a thousand patients and study them carefully and were able to get accurate casualty studies of a total of some thirteen thousand victims at the two cities.

The biological aspects of the tests at Bikini were planned from two angles. One to supplement the knowledge gained in Japan and to close in the blank on the early changes produced there. We did not get in as you know until five weeks afterwards and during that early period the Japanese were so disorganized no investigation worthy of the name was carried on. We had to see what happened in the early stages and in addition we had to determine through our animals at Bikini what variation in the factors of protection, of distance, by structure in way of the steel in the ships, by water in relation to depth beneath the water line might be determined, so that we might tell with a fair degree of accuracy what might happen in the future to a naval vessel, or a civilian vessel for that matter, that came up against an atomic explosion.

We had a ship to ourselves, an APA, familiar to navy men—one of the large transport vessels to those of you who are not familiar with navy terminology. This ship proved to be very well adapted for its purpose and we brought our surviving animals around after the tests and disembarked them at the Washington Navy Yard at Anacostia and are now following them at the Navy Medical Research Institute just outside Washington in Bethesda. It will be necessary to follow these animals for a number of years and a number of generations. As you know from the observations of the roentgenologists, and as you know from the work of Dr. Muller recently publicized by being the recipient of the Nobel Prize, that the effects of radiation may not be apparent in the first, second or third generation, but it may be many generations before the mutations induced by the radioactivity can be thoroughly evaluated.

I might mention in passing while we are speaking of this, that one interesting observation was made on the high school girls in Nagasaki with the aid of our Japanese co-workers. We rounded up for study a group of girls between sixteen and twenty-one who had been menstruating normally prior to the explosion of the bomb. Less than a third of them were menstruating normally following the bomb. Now there are a lot of problems that have to be reckoned in there. There is the question of psychic trauma, there is the question of relative malnutrition in the bombed area, the question of impaired health, lowered resistance to diseases, but none the less there does seem to be significant evidence that there is a disturbance of an ovarian function in some members of this group. We found testicular atrophy in a fair number of the males who received heavy radiation both at Nagasaki and at Hiroshima and we assume that there is a fringe further out from the center of the bomb at the time of the explosion who are not sterilized but who received sufficient dosage to alter the germ plasm.

Now with this preamble let's turn to some of our slides. When we moved into the Bikini area our main worry was what was going to happen if the weather was bad. Our animals were scattered on twenty-two target ships spread over the lagoon at Bikini. It was a rough job caring for five thousand animals on shipboard. You can imagine how much rougher it would be if we had to leave the lagoon every day to go outside to the open ocean in readiness for the bomb drop and then to come back if the weather was bad. And then to spread our care of the animals out over twenty-two ships. By amazing luck we had a good day on the first of July which was set for the bomb drop and this is what the automatic camera on the island of Bikini—there blow the palms of Bikini in the foreground—registered at the time of the explosion of the bomb. You can see the great cloud that eventually rose to 35,000 feet and drifted far through the stratosphere. This was just starting to rise and you can see on the target ships the smoke is beginning to sweep out. This is only a fraction of a second since the explosion of the bomb. Here you can see how the smoke is beginning to boil up from various ones of the target ships. Here are some of the further target ships. These are LCT's in the foreground, relatively undamaged. Some of our animals were just out of the picture over this way—just on one of the LCT's on the beach, and we had them spread from there clear to the center of the bomb area and far beyond it on the other side, so that we got some of our animals in every range of exposure from virtually none at all to those that were heavily damaged.

Now this is visual evidence of one of the effects of the bomb. This dark streak on the water that you notice is a pressure wave, branching out over the surface of the water, coming from the center of explosion out across the lagoon. These smoking ships are evidence of the thermal radiation that was encountered. And this thermal radiation is the first of the two distinctive features of the atomic bomb and one of the ones which led to a great number of casualties. As we went through the Bikini area we were able to see evidences in there of scorches which showed up on the paint of the vessels, on the material placed on the decks, etc., but nowhere was it as vivid and clear as it was in Hiroshima and Nagasaki.

Here you see the pedestal of one of the mythical sacred animals, the Kaigori, so-called, in the Chogoku shrine. The Japanese assumed that we would protect their shrines and consequently they used this shrine for military headquarters. I will show the orientation of it a little later. And this is one of the mythical sacred animals that was guarding

the outside of the shrine. And if you notice this granite pedestal, you can see how the granite was flaked in the portion that was exposed to the bomb. The bomb burst relatively speaking was up here and out of the picture and going down this way. This entire face was almost a sandblast in effect and the more exposed portion of this later region also got the effect of the instantaneous heat.

The next slide brings out a view of the hypo center of the bomb. The bomb burst immediately over the cellar of this little private hospital at Hiroshima. And incidentally we were quite excited when a very hot Geiger reading was reported about over in this region here. And then we lost a great deal of enthusiasm when it turned up some radium had been used on a patient for Ca of the cervix at the time. Here is one of the Torii still standing at the entrance of this shrine about a hundred and fifty yards away from the center. Owing to the fact the form was downward here you will note that the bomb left standing the Torii and this little wireless transmitter. Literally they would have been swept away but where the component was downward their narrow cross section presented to the force of the blast enabled to keep them standing. The headquarters of the second grand army was within this shrine, the Kaigori which I pointed out to you was this white spot over in here.

The next slide is an example of what happened to one of the reinforced concrete buildings. They really built concrete to last in Japan because it has to be earthquake proof and the engineers told me that the specifications were far better than those of any of our own cities. And you can see how this reinforced concrete building, this was at Nagasaki, was virtually crushed by the blast. This is approximately one-sixth of the building on the lee side that persisted. Everyone in the building was killed, not all by the blast, but some of them by the radiation which they received, in spite of the shielding with the concrete.

The next slide gives you an idea of how Nagasaki looks in the bombed area. You remember that the Nagasaki bomb was dropped in a valley, running up northerly and slightly westerly from the harbor and you can see the rice fields here reaching up the side. And this area here had been densely populated. The average density of population was eight persons to every forty-six square feet in this area. So you can figure that they were really packed. In Nagasaki we had approximately forty thousand killed and an equal number injured; in Hiroshima eighty thousand killed and eighty thousand injured.

In the next slide you see a view of Nagasaki looking up to the region that we just saw. The region that we just saw was the other side of this hill here. And this little dog leg of hill came down and protected this region more or less. Here is a

continued on next page

typical Japanese house. One and a half stories, tile roof, thin wooden walls, with mud and bamboo for partitions, meat for any fire or any heavy blast that came along. This was taken from a window of a Shinkoseh school, which had been taken over as a hospital and in which we had a group of the Nagasaki bombed patients. One thing that undoubtedly explains a large number of casualties in these two cities was first that Japanese were too disorganized to do very much in taking care of the victims. It was two days before the first organized rescue party came in either city and then when they did round patients up for hospital care, it was the most primitive type imaginable. Unless they had their own family there to care for them there was no real care. Nursing care as we understood was not existent. The doctors injected vitamins, they put cod-liver oil on the burns, cod-liver oil ointment, they did a little minor bandaging and they gave autotransfusions. That is they would take 10 cc. of blood out of a vein, and inject it into the gluteal muscles. Our blood transfusions or plasma transfusions were non-existent. A few sulphur drugs were used but no penicillin. It is no wonder that the death rates in these hospitals were terrifically high.

In the next slide we see another evidence of the heat, the thermal radiation that was given off by the bomb. This is part of a woman's kimono. This was dark red plaid and as you see the red was burned through, the white here and there slightly scorched but in general untouched. This is a placard in the railroad station at Hiroshima and the figures were painted in here with India ink on white sized paste board. The paste board reflected off the bulk of the radiant heat while the India ink absorbed it. It was burned through and scorched wherever the ink was displayed, but untouched in the white area.

Here are some chairs which were in front of a window at the Red Cross hospital in Hiroshima and you notice the patches of burned plush where they were opposite the window. And this is the shadow between the windows and this is the shadow of the window sill and the wall here and this is where the window fell upon the plush showing the radiant heat which acted upon them.

Here is a bridge across one of the five rivers that go through the delta at Hiroshima and you note on the asphalt surface of the bridge the burned shadow of the post and of the railing. You notice also that the blast came after the heat. The shadow protected the asphalt from being burned and was continuous with the instantaneous heat. Remember it travels at the speed of light, 186,000 miles per second. It travels eleven hundred feet per second. Now by triangulation of these shadows and



the objects which caused them it was possible to calculate with a great degree of accuracy the exact location of the bomb burst. And we were able to find it was dropped at the precise spot desired and that for all practical purposes at the exact height desired. A beautiful piece of engineering, calculation and skill in the aviators that did the job.

To illustrate the sun-like character of this thermal energy, the great speed with which it came I choose this picture. Here you see a board fence at Nagasaki. This board fence is made out of cryptomeria wood about like our soft pine and this showed a uniform carbonization as a result of the radiant energy. But where grass had stood at the time of the bomb burst in front of it, the grass was enough to protect the wood. The shadow, the unburned shadow of that grass persists here, cast before the blades of grass had time to wave or wither. Similarly you see how this pole, which I had lowered a little, this wire which I had raised a little had also protected this wood from carbonization. Probably a few thousandths of a second was enough to produce this burn. When the heat hit humans it gave first and second degree burns in many instances and those who were closer in received third degree burns. This man shows, not too well, flash burns of his cheek and his ear. You can see the swelling of the ear somewhat and some of the scarring of the face. Note the epilation of the scalp.

That is the second distinctive feature of a burst of atomic energy from one of these bombs. The freeing of ionizing radiation as well as thermal radiation. And he has lost all of his hair. Complete epilation of the scalp was not infrequent in many of the more seriously ill. It began to appear a few days to two or three weeks following radiation and was quite marked at the time we saw them in mid-September and October. In fact one of the ways we use to pick out some of the survivors

of the bomb for study was just to walk through nearby villages and when we saw anybody epilated or anybody with a first or second degree burn we would ask them where they had been and if they had been in a region that we wanted for study we would ask them to come in the hospital.

Here we see one of the typical beds at the hospital at Omura, a naval hospital which we took over and where we harbored a considerable number of the atomic bomb victims. And here we see again a partial epilation. This lock of hair really belonged on the other side but she combed it over because she thought it helped her appearance. Again you can see the first degree burn of the cheek and of the neck and the epilation almost complete on this side of the head due to the ionizing radiation.

I might say that the teapot is universal. Water is unsafe to drink anywhere in Japan unless boiled and tastes so bad when it is boiled they make tea to make it drinkable. This is one of the sake bottles which help to keep the patients a little cheered. They have the cotton blankets and quilts to keep them warm.

This woman had at the time this picture was taken a white blood count of approximately eleven hundred, a red blood cell count of about two and a quarter million and she subsequently died of an aplastic anemia because of the bone marrow damage induced by the radiation that she had received.

Here we see a man. This is a Javanese, prisoner of the Japanese. He was working in a prison camp in Nagasaki down the river from the burst of the bomb. He was working stripped to the waist and you can see here the lines of his belt and trousers. He has assumed for us here—this photograph was taken on one of our hospital ships, the Haven, which was evacuating him—that exact position he occupied at the time he was watching the objects falling down from the plane and wondering what they were before the burst occurred. And as you can see he has these second degree burns over the exposed areas and is absolutely untouched where the shadow of the forearm fell across the chest. Note also on his left arm, how the upper part of the arm was shielded by the body and just part of the extensor surface which protruded over beyond the body and got into the rays of the heat from the burst was caught. These sharp demarcations were a very characteristic feature of the burns that we saw.

This man had a transient leukopenia, a transient anemia and with the aid of several transfusions recovered and to the last of my knowledge, which was some four months after the exposure, he is perfectly well. He was not close enough in to have any epilation as you can see from the condition of his hair.

This is a girl which I meant to show earlier with the example of the dress. You remember the plaid with the dark areas burned out. And she got these third degree burns where the dark marking of the plaid was, third degree burns up here where she was unprotected. In this region protected by the shadow of her hair and where the cloth was white very little effect is apparent.

Some of the traffic cops in Nagasaki were very interesting because they wore white shirts with a black cross on the back to make them stand out for visibility in the traffic. They were unburned beneath their shirts, some of them, but the outline of this black cross was very clearly burned.

Now here we leave Japan and the Japanese and come back to Bikini. This is the second test. This is the most appalling spectacle that I ever expect to witness. I was actually scared as a matter of fact. This is what we saw the first instant after the burst. You can see the target ships in the foreground here. You can see the cloud just beginning to fray out from it a little bit. And here in this instant we have eight million gallons of water starting up in the air. You note that there is no disturbance yet in the target ships. There are no waves. This was practically taken from the same vantage point as the other, in fact, these palm trees down here are exactly the same palm trees that you saw in the first picture.

That was an intensely glowing mass. As near as I could make out about the equivalent brightness of the sun. Much less than in the air burst because much of the light, much of the heat, was absorbed by the water.

Here is the next stage of it. The cloud is beginning to scatter out. The water is on its way up. Here are the waves beginning to come out. These waves, you can get the scale, this is a battleship here and you can figure from the mast how high this initial wave must have been. It petered out very rapidly when it reached Bikini and here they were only four or five feet high. But they were really something at the start as you can see. Now note that this is not only a mass of water but of superheated steam and of radioactivity.

And here is what it looked like a few seconds later. This great mushroom of water, steam, laden with deadly radioactivity spreading out with a column of solid water here. There is the battleship in the foreground for the scale, as you note this ship up there, and this is again a solid column of water reaching through this about up to this region here. And from this rain, down on the target ships which you see scattered along here, the water was made radioactive by virtue of the neutrons that have been discharged into it, surcharged with radioactive sodium, with radioactive chlorine and also contain-

continued on next page

ing some of the fission products of the bomb. And the cloud is just starting to climb at this point here. The cloud in this case of course did not go as high as in the air burst. In the first it went thirty-five thousand feet and in this it went only about half as high.

Now it was in the ships that received this rain of radioactivity our animals were placed. And in the study of those animals we had therefore two things to consider. Not only the initial radioactivity which we had to work with in the first test, testable, but we had also the problem of residual radioactivity from the induced activity in the vessels, and included activity in the water and the fission products from the explosion itself. So that here our relative loss of animals was greater than in the first test - - - in the first test we had the advantage of the Japanese experience and were able to disperse our animals so that only 10 per cent of them were immediately killed and the great bulk of them were available for study as sick animals following the test which was of course the most valuable information for us.

In the second test, however, the residual radioactivity had delayed us before we could go back on the ships to get the animals off. It was such that they received much heavier radiation and many of the animals had been killed by radiation by the time that we had recovered them.

In any discussion of this experiment it would be quite remiss not to put in a word of appreciation for what the Radiologic Safety Section under the guidance of Colonel Stafford Warren was able to accomplish. In the entire operation of these two tests with forty thousand men, not a single individual was damaged from the standpoint of radioactivity or the effects of the bomb. That proves a major accomplishment in preventive medicine. They had a fine group of monitors to check the radioactivity of the water of the various target ships and to tell us when it was safe to go aboard and how long it was safe to stay aboard. With all due respect to monitors, I'm a little skittish about radiation and so we did our own confirmatory monitoring in the section after the radioactivity monitors told us it was OK. We did not find any deviation from their results but we thought any extra check was worthwhile. The monitoring was so good that we could tell where it was safe to go in the lagoon, when it was necessary to shift our anchorage to distant points away from the radioactive deposits in the water; when we could run our evaporators and get distilled water to use and when we had to shut down and go outside in open ocean to make our water. The degree of protection which the Radiologic Safety Section offered us was really amazing and thoroughly gratifying.

In the rescue of our animals some of the work had to be very snappy indeed. We had one ship where two minutes was the length of time to get tolerance dose so we had to organize our teams highly so that we could get our animals off, for two minutes was the longest time we could stay aboard. Other ships we could take a longer time.

The impressive thing in the way of driving home the lesson of the dangers or risk of residual radioactivity, was to be forced to stand by, to see the entire salvage force required to stand by while the *Saratoga* sank. There she was, we could have put her in the shallow water if we could have gotten nearer, or pumped her out, for she just settled slowly and it took her hours to sink. She could have been rescued had it not been for the radioactivity in the water near her and the radioactivity on the vessel itself. This brings home very forcibly, the fact in the use of atomic energy we have to consider not only the immediate risk but the residual risk as well. And even in experimentation with radioactive isotopes at the present time, if you deal with materials that have half life of any appreciable duration one problem is of disposing of them when your experiment is over.

Fortunately the Manhattan District, had worked out certain rules that had to be followed in the way of the disposal of the material. As you realize there is no more warning in regard to the radiation given off by the atomic bomb than there is to the radiation of x-ray or radium. You don't feel it at the time, it is afterwards that you feel it.

One of the very important things we must do with atomic energy, if nuclear energy is to be used more widely in peacetime, is to map out some satisfactory and easy method of picking up radioactivity. A Geiger counter is all very well but if you have a counter set too sensitively it will jam.

So that we have yet to find a much simpler and much more foolproof method of measurement of radioactivity before it will be permissible to use nuclear energy on a widespread scale for peacetime purposes.

So far as I can see if we depend upon therapy, in the utilization of nuclear energy, let us say, in the treatment of carcinoma or something of that sort, we are going to be disappointed. The good that it will do will be far less than the harm that it may do. On the other hand, considered from the standpoint of a tool for research, as tracer substances, we can learn much more of the metabolic processes of the body, of the mode of action of drugs, of the way in which toxins take effect, etc. There it will be of enormous value to us and well worth all the efforts that have been entailed in its development.

One final word. Many of you probably are very critical of the use of these bombs in Japan, just as

continued on page 917

THE FUTURE OF MEDICAL RESEARCH*

THEODORE G. KLUMPP, M.D.

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THE little auk is a legendary bird that flies backwards to keep the wind out of its eyes and because it is more interested in seeing where it came from than where it is going. Let us for a moment imitate the little auk and look back about a century.

A short time prior to 1844, the steamboat, the steam engine, the cotton gin, the electromagnet, the telegraph, the sewing machine, the harvester, and the bicycle had been invented. Woehler had synthesized urea. Davy had isolated sodium, potassium, calcium, magnesium, sulfur, and acetylene; chloroform and chloral had been discovered; atropin had been isolated; and the anesthetic effect of ether had become known. The impact of all these discoveries was too much for the U. S. Commissioner of Patents of that time. Like the little auk he looked back at what had been accomplished and it made him dizzy — so much so that he announced: "We see the arrival at that period where human improvement is at an end." During the next few years the Bessemer steel process was invented, Perkin introduced aniline dyes, cocaine was isolated, Kolbe synthesized salicylic acid, and, somewhat to my regret, the lawn mower and the typewriter were invented. These discoveries went to the head of the U. S. Commissioner of the Interior who was also flying backwards. He stated in 1875, "New materials and new inventions have now transformed our society into its final phase, for scientific inventions can take us only a little way further."

These distinguished public officials were not the only little auks in our community. When I finished medical school in 1928 we were deep in the trough of therapeutic nihilism. Chemotherapy's future was its past. Bacteria were considered to be so similar to the living cells of the body that anything capable of killing them would also destroy the living tissues of the body and thus do more harm than good. In fact, it was argued that bacteria were

able to thrive in the body for the very reason that they had cleverly succeeded in counterfeiting the biological chemistry of living cells. The main hope seemed to lay in immunology, serums, and vaccines. Our best medical investigators were thinking along those lines. Drug houses and public health laboratories were also principally interested in the future of biologicals. Some of them were making large investments in horse farms for the production of antisera when Prontosil burst upon the world to inaugurate the second great era in therapeutics. Almost overnight chemotherapy was resurrected from the dead. Even if nothing else were discovered, you and I are privileged to be living in an age which, compared with the pace of progress in the past, may be regarded as the golden age of therapeutics. It is also most encouraging that American chemists and clinical investigators have at last caught up with the Germans, and together with English workers, seem to have wrested leadership from them.

But how much has been discovered? Are we now prepared to repeat what the Commissioner of Patents said in 1844? Thrilling as our discoveries in medicine have been, we have really accomplished very little in relation to the great things that remain to be done. We have only succeeded in establishing a firm beachhead on the vast continent of medical science that remains to be explored and conquered. A number of substances that depress or stimulate various functions of the body have been discovered. As adjuncts to living they are important but they do not substantially affect the fundamental processes of life itself. We have discovered substances that have an inhibitory effect upon a few parasites and bacteria, and we have succeeded in synthesizing agents that appear to stimulate the action of three or four of the many hormones secreted by the body. Likewise, we have found out something about the constituents of a few organs and body secretions and have succeeded in recovering some of their active principles. We have taken food substances and by relatively simple degradation studies we have found out something about their constituents. We have even succeeded in synthesizing, not the foods themselves, but a few of their simplest building blocks. We have done a great deal of exploration

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tory descriptive work in medicine, but in changing the course of nature to suit our purpose, we have hardly scratched the surface. It was Will Durant who said that most of man's progress has come from not letting nature take its course.

We look upon the discovery and manufacture of penicillin as a remarkable accomplishment. But is it really so remarkable? Fleming made his original observations in 1929, and we sat around for 12 years before we got on to the idea that his discovery could be applied to the treatment of disease. And even here, just how clever and ingenious has been this remarkable organ of ours, the human brain? We have pointed with pride at our brilliance in providing something like the right food for the lowly mold, even though every housewife has had occasion to learn something about the feeding habits of molds on bread and jellies. Nevertheless, we have left it to the mold to do the real chemistry for us. Although penicillin has excited perhaps more medical and chemical interest than any discovery in a decade, at this point we are not even sure of its exact chemical structure. But we have found the right solvents to separate the unused food from the penicillin, and we dry it. Penicillin notatum is one of the lowest forms of life, it can't think, it can't talk, it can't even move and get out of its own way, and yet our scientists have not yet succeeded in duplicating what to this mold must be an exceedingly simple routine chemical turn.

Dental Caries

Take another serious problem with which we have wrestled for many years. There are in our mouths certain structures composed largely of calcium phosphate. A chemical reaction occurs, in the course of which the calcium salts of our teeth are thrown into solution and we have what is known as dental caries. Despite the fact that this chemical process results in widespread suffering and disability, we have not yet determined exactly how it happens. We are not sure of the factors involved, and we have done very little, if anything, to prevent dental caries. And yet when we consider the problem from the standpoint of chemistry and bacteriology, it does not appear particularly complicated. From an objective scientific point of view it looks as if it were something we should have solved long before this.

We have nibbled at the edges of such serious conditions as arthritis, rheumatic fever (perhaps the No. 1 health problem in this country), tuberculosis, undulant fever, diabetes, allergy, and exophthalmic goiter but we have not by any stretch of the imagination mastered them.

I mention these things because I want to show you that we have only scratched the surface and so emphasize how much remains to be done. I want to show you that the Commissioner of Patents a

hundred years ago was wrong, and anyone who thinks like him today is still wrong.

Longevity

But what are the most important things that remain to be accomplished? I can answer that by asking a question. How many of you would like to live in good health for 130 years? Is that an absurd thing to ask? I think not. It is biologically possible for many of our children or our children's children to live that long. According to one theory, in the animal kingdom the life span of a species is five or six times longer than its period of maturation. On that basis the normal span of man should be from 125 to 150 years, and indeed there are records of individuals living as long as 130 years. In 1938 the Russian scientist Bogomolitz sent an expedition to the Caucasus to study 12 persons between the ages of 107 and 135. Last week a man 104 years old was arrested for gambling in New York City. Now if some individuals can live that long two things are possible of attainment: the long-lived individuals can be made to live a little longer and the lives of many more and eventually most human beings can be prolonged to that ripe old age. But to achieve this we must learn a great deal. We must learn a great deal more about biological chemistry, we must learn infinitely more than we know now about the chemical factors that influence longevity, and then through medicinal chemistry we must modify those factors in the direction of good health and long life.

It has been said that the way to live long is to come from a line of long-lived ancestors. A few years ago I had the privilege of discussing this problem with the late Dr. Llewellys Barker, professor of medicine emeritus of Johns Hopkins University Medical School, who was then a very old man. He agreed with me that to talk about long-lived ancestors doesn't explain anything. It simply means that the individuals in a long-lived line inherit a pattern of chemical behavior that is conducive to long living. The important thing to find out is in what respect these individuals differ from those who are not so fortunate. You who examine large numbers of patients coming to the hospital must have been struck, as I have, with the observation that some are physiologically and anatomically through at forty, presenting all the signs of extreme deterioration and senility — arteries hard and calcified, high blood pressure, and a heart that was failing at its work. On the other hand, we encounter others twice as old with a twinkle in their eyes, elastic minds and arteries, and very few of the manifestations of deterioration and degeneration.

At the present time we actually know pitifully little about the factors that influence the rate at which we go down hill. Indeed we are absolutely certain of only one fact. Overweight is highly prejudicial to long life. The very old person is almost

invariably lean and often very thin. But what else influences longevity? What diets, for instance, predispose to long living? Should we eat much meat or little? Is a vegetarian diet beneficial, should we drink lots of milk, or Bulgarian bacillus milk, or lots of water instead? How about eggs? Dr. Leary, the distinguished Boston pathologist, believed that food rich in cholesterol, such as eggs and cream, predispose to arteriosclerosis and should be avoided, but most pathologists disagree with him. How about exercise and physical work? Should we keep on exercising, or should we take a great lawyer's advice to the effect that when you feel the impulse to exercise coming over you, sit very quietly until it passes off, and then just keep on sitting. Or should we follow the adage that hard work never killed anyone?

What about fresh air, sunshine, vitamins, vacations, 8 hours of sleep, cold baths, sexual activity, alcohol, and tobacco? There are opinions on these questions, but from the standpoint of scientific proof, very few established facts. Some years ago, the late Raymond Pearl studied statistically the mortality records of smokers and nonsmokers. He came to the conclusion that smoking had an adverse effect upon longevity. He may be right, but I am convinced that his studies didn't prove the point. All he showed was that smokers don't live as long as nonsmokers. And the reason I think he failed to prove it is this: As a statistical group there are other significant differences between smokers and nonsmokers. The smoker is apt to be a more venturesome nervous type. He is the fellow who has to be doing something, who has to keep his hands occupied. He places a high valuation on sensual stimuli. The nonsmoker is a fellow who successfully resists all the temptations to smoke that in our present-day society bombard him every day. As a group the nonsmoker must represent a less nervous, more placid, sterner, temptation-resisting, less venturesome type. Is it not possible that these inherent differences in constitutional and nervous characteristics are factors that influence the life expectancy of these two groups, and may actually overshadow the effects of the smoking itself? One thing is certain, many smokers have lived to a ripe old age. This proves only that smoking is not incompatible with long life. But it does not prove that smoking does not shorten life, and in the end Raymond Pearl's conclusion may be correct though his data may have failed to prove it.

It is clearly apparent that as far as the cellular elements of our bodies are concerned we could, as a species, live many years longer. The cells of our body are capable of dividing and renewing themselves almost indefinitely, even as the simple paramecium. Incidentally, barring accidents the paramecium possesses a kind of immortality in eternally

dividing, growing and dividing again. But man's complicated large mass of differentiated protoplasm requires an internal transportation system, his circulation, and this appears to be the unit that is the least common denominator of longevity, the limiting factor. It is this that will have to be made more enduring if we are to achieve an age of man that is substantially greater than we now enjoy. But this is in the last analysis a chemical problem. The aging of our blood vessels is accompanied by a loss of elastic fibers and a deposition of scar tissue and calcium salts. This is arteriosclerosis. But arteriosclerosis does not happen by spontaneous degeneration. There are subtle chemical changes, mediated by changes in endocrine functions, which lead to the structural manifestations recognized as arteriosclerosis. We have learned to detect the obvious structural end result, but we know nothing (I think I am justified in using the absolute term) about the functional chemistry that leads to hardening of the arteries.

Cancer

In considering the problems that confront those interested in man's welfare, cancer is among the most important. In a sense, cancer is a biological accident, and of the accidents that befall us it is the most destructive. It kills more human beings than anything else except heart disease. There are two roads to the conquest of cancer. The first is the destruction of the cancerous cells by means of some agent having a differential lethal effect upon them, sparing to some extent the normal cells of the body. The important factor in this equation is the extent to which the normal cells are spared. We have been walking down this road a long time with injections of lead, arsenic, and X-ray and radium, but we have not traveled very far. Radio activated elements and the nitrogen mustards are now being tried. They may carry us farther along and add to the lives we can save. But even these weapons do not offer hope of solving the problem of cancer which is more deeply fundamental to biology and biological chemistry than any process of simple differential destruction. Surgery is, in some cases, a very effective and skilled mechanical application of the same principle, but it is a primitive approach to the problem which, as you and I know, sooner or later finds itself confronted by the stone wall of vital structures that cannot be extirpated.

All cells of the body are part of a highly organized system, and as units in this complex society they are subject to very exacting central control. Their coming and going is carefully regulated from headquarters. Sometimes a cell or perhaps a tissue goes off on a spree of reproduction, which we call a neoplasm, or cancer. But we don't know why it does this. We don't know whether this is the result of rebellion, a condition in which the controls are

continued on next page

as they always were, but an individual unit runs amok, or whether something has happened to the controls permitting a cell, or cells or tissue, to resume its once accustomed role of division at an accelerated rate. There are many biological facts, too numerous to recite here, that persuade me toward the view that cancer is probably a combination of both factors, but the important aspect of this speculation is this: The changing pace, and sometimes even static periods in the progress of a cancer suggest that some element of control persists even in the case of highly malignant tumors. It is already possible in certain forms of cancer to strengthen this control so that the rate of multiplication is appreciably slowed down and sometimes apparently stopped for long periods. I refer principally to the work of Huggins with castration and female sex hormone therapy in cancer of the prostate, and the very recent observations of Herman and others on testosterone in cancer of the breast. In my humble estimation these studies are the most significant and important contributions that have ever been made in pointing the way to the understanding and control of cancer.

And this leads me to the second road toward the conquest of cancer. Eventually we shall find other internal secretions that regulate the growth of cells of the other tissues of the body. They are there, they must be there. The orderly growth, development and repair of tissues in their proper sequence and to their proper end point cannot take place without extra cellular coordinators and regulators. Muscles, bones, connective tissue, vessels all grow in harmony, and in the processes of menstruation and pregnancy we see a repeated and wonderfully integrated evolution and involution of many different structures, tissues, and cells. Somewhere in this process lies the secret of cancer. But we have gone after this precious information like Klondike prospectors each with his pick and pan turning up a little gold. This is a problem that is worthy of a better, bigger, more intelligently mobilized effort.

Dental caries, old age, and cancer are not the only unsolved problems before us. If you want to gain a comprehensive idea of what remains to be done, you need only consult the catalog of the causes of death and the classification of diseases. Every cause of death and every illness suffered by man or useful animals is an unsolved problem. After you have looked up what we know about each one of the conditions listed and leave a generous margin of reserve for new diseases which are constantly making their appearance, you will have some impression of the vast territory that remains to be explored and conquered.

In the entire war we suffered a little more than 1,000,000 casualties of which about 250,000 were deaths. But approximately one million Americans

die each year from chronic diseases, and another half million from acute conditions. In 1943, it has been estimated, there were 25 million individuals suffering from chronic ailments with a total disability of one billion man days. It is a shocking commentary on the state of the nation's health that almost six million men in the prime of life, one out of every three examined, were found to be medically unfit for military service. Analysis of the causes of disability show that this situation is largely due to unsolved shortcomings in medical knowledge rather than derelictions in medical care.

Brains and two billion American dollars produced an atomic bomb. American brains and adequate financial support can produce equally spectacular results in saving lives. We have the brains but up to the present we have not even been penny wise in our spending. This is perhaps due to the fact that the public has been largely unaware of how little is actually being spent for medical research. Until the era of the atomic bomb, few appreciated fully that even in science it takes money to produce results. The cost of the atomic bomb is an easily remembered yardstick against which we can measure what we can afford to spend to save lives. The most serious group of diseases are those of the heart and blood vessels which in 1943 killed more than half a million, and were responsible for the disability of some eight and a half million persons in the United States. And yet it has been estimated that we devoted in 1944 the paltry sum of \$615,000 for research in these diseases. In the same year more than thirty-one million dollars was spent for cigaret advertising. Arthritis does not ordinarily kill but there are over seven million in the United States afflicted with it. And yet the amount spent for research in arthritis is so small that it cannot be found. Cancer caused the death of 166,848 individuals in 1943 and it was estimated that there were close to one million active cases in the same year. We thought enough of cancer to spend almost a million dollars for it of which only a small fraction went for the study of the cause of cancer. But at the same time a single company could spend almost nineteen million dollars for the advertisement of soap. There were 57,005 deaths from tuberculosis and approximately 680,000 persons with the disease in 1943. For this we could only afford \$865,000 for research, while at the same time the Department of Agriculture received appropriations of \$40,000,000 for research and an additional two million dollars for white-pine blister rust control. During the war the Office of Scientific Research and Development devoted fifteen million to medical research, but American business spent more than a billion dollars on war advertising.

These are a few examples to illustrate that what we lack fundamentally is a proper sense of values.

Like "Through the Looking Glass" everything is upside down. Even Dr. Vannevar Bush who is one of our most forward looking scientists asks for an initial appropriation of five million dollars and an ultimate maximum of only twenty million dollars for medical research for the entire United States, from a government that can afford to spend forty million dollars a year for agricultural research. Perhaps Dr. Bush's restraint is motivated by what he thinks he can get from a people who are not yet awake to the importance of medical research. In my opinion we are attacking concrete fortifications with pop guns. In comparison with research in other fields, plastics, metallurgy, petroleum, communications and transportation, medical research looks and is small-time and amateurish. A comparison of the money and manpower behind research in the mechanical sciences with that devoted to medical research will reveal why the science of saving lives and preserving health has not progressed more rapidly. John Hodgdon Bradley in "Patterns of Survival" states, "It is odd that the nature of stars and the behavior of gases should have stimulated far more and far abler inquiry than have the nature and behavior of men. To be sure, they are more gratifying subjects for study because they are more simple, but man can live without knowledge of stars and gases whereas he is finding it increasingly difficult to live without knowledge of himself. Without such knowledge he is finding it increasingly difficult to benefit from his vast and growing knowledge of everything else."

In planning the future of medical research we must not permit individuals to rise to positions of great influence or power over the subject matter of medical research. Authorities measure the cloth in terms of their own knowledge and experience. If it fits what they already know it is good and approved. If not, it is rejected. In other words, learning stops at the boundary of their experience. On the other hand, great progress, new discoveries, new ideas, only start at that boundary and go beyond. It is not new until it does so. But the powerful academician, the director general, the great pooh bah or whatever one calls him often refuses to acknowledge or accept such an advance because it does not ring true with his experience. The danger is that because of his totalitarian influence he will restrain those who would stray from the well paved road into the unknown. This has been the history of science. It happened to Pasteur and it is happening today. That is the danger of powerful Academies, governmental research and any type of authoritarian regimentation of science. To prosper best the direction of research must not be controlled by purse holding administrators or ex-scientists with a flair for politics and a lust for power. It must be free and competitive. Its direction must be

guided by many scientists working together in setting broad objectives but competing in independent groups in pursuing those objectives. Our great industrial achievements were built on competition and we must take a leaf from this notebook and apply it to medical research. Governmental research is conducted under the sway of the classic philosophy that there can be no competition with government. If necessity is the mother of invention, its father is competition.

If we are wise and worthy of a nobler destiny we can turn the lesson of death and destruction to the constructive task of building a secure foundation for health and long life. In developing a program for the promotion of science we must give medical research the attention it deserves in the pattern of the American way of life.

MEDICAL ASPECTS OF THE ATOMIC BOMBINGS

continued from page 912

I was before I went over there. I thought it too bad we didn't just tell them that we had the bomb or that we didn't drop it on the herds up in Hokkaido as a demonstration and let them know what we had and let it go at that. However, when I talked to some of the leading Japanese both in the Japanese Army and the Japanese Navy they told me that the dropping of the bombs actually saved many Japanese lives as well as many American lives and they were glad that it had been dropped. To surrender to ordinary warfare would be to lose face and consequently they could not surrender because it is better for a Japanese, particularly a prominent Japanese, to die rather than to lose face. However, when the atomic bombs were dropped, here was something supernatural, something which no Japanese would understand at first, something which was beyond their means of combatting and this gave them a means of surrendering and saving their face. It meant that the war ended when it did instead of being a matter of fighting valley by valley, island by island until millions of Japanese and hundreds of thousands of Americans were fruitlessly killed.



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THE 100th ANNUAL MEETING

WHEN the Providence Medical Association holds its annual meeting on Monday, January 6, 1947, it will be officially recorded as the one hundredth annual meeting of the Association. In view of the fact that the Association actually was started on January 31, 1848, and it held its first annual meeting in that year, some explanation of why the meeting next month is designated as the one hundredth meeting is necessary.

The recorded history of the Providence Medical Association reveals that its organization was started when a group of physicians met in the office of Dr. H. W. Rivers, on January 1, 1848, for the purpose of forming a Providence Medical Society for the mutual benefit of the members. A committee of three doctors was formed to prepare a constitution and by-laws, and to draw up a fee table. This committee held meetings on February 5 and 14 of that year, after which its report was presented for approval by all the physicians in the city. After the February 14 meeting the group adjourned officially to the date of its annual meeting held on March 6, 1848, at which time the first officers were elected, with the honor of being the first president going to Dr. S. Augustus Arnold.

As the by-laws of the Association originally drawn provided that the annual meeting should be

held on the first Monday evening in March, the records reveal that the second annual session was held on March 5, 1849. From then on there was an unbroken series of annual meetings held during the month of March until Dr. W. A. Risk, treasurer of the Association, called attention at a meeting held in December, 1912, that the fiscal year should begin with the calendar year. His motion making such action effective as of January, 1914, was unanimously adopted by the membership. Consequently, the sixty-sixth meeting of the Association, held March 3, 1913, was the last to be conducted under the provision of the old by-law. Then on January 5, 1914 the procedure of having the annual meeting on the first Monday of the first month of the year was inaugurated to be continued until the present time. Thus, we come into 1947 with the hundredth meeting of the Association.

It is fitting that thought be given at this time to plans for the centennial of this Association which will be held in 1948. A committee has already been formed to start preliminary plans, and undoubtedly much work will be accomplished during the coming months. The entire records of the Association have been microfilmed and much interesting data will be prepared from these records.

REGIONAL FRACTURE COMMITTEE

Elsewhere in this number of the JOURNAL appears the report of the organization meeting of the Regional Fracture Committee of the American College of Surgeons, under the chairmanship of Dr. Henry McCusker. It is good to know that the Committee is renewing activities necessarily stopped during the war.

The treatment of fractures had received a great impetus in the right direction before the war started. War surgery involving bones is largely another matter. Rarely in peace times does the fracture specialist encounter the tremendous mutilations so common in war. There is no branch of surgery where right principles of treatment, promptly instituted, are of more value. A poorly handled fracture may not result in death but in a lifetime of disability.

Great advances in fracture work have been made of late years and the American College of Surgeons have played a good part. In New England, goaded by the dynamic Dr. Charles L. Scudder, of Boston, valuable meetings and organizational activities were proceeding most satisfactorily in the pre-war days. We trust these may be revived and that our local committee may collaborate with them as well as promote good and instructive work in our own communities.

KENT COUNTY HOSPITAL

Great credit is due the physicians of Kent County for the initiative and foresight in planning for a hospital for their community. Not only have the Kent County doctors drafted enabling legislation to permit the establishment of a hospital in their county, but they have also been willing to contribute to the expenditure necessary for a survey of the area to decide the type of hospital necessary to meet the medical and surgical needs of the people of Warwick, West Warwick, East Greenwich, Coventry, and West Greenwich. The present plan calls for a seventy-five bed hospital to be erected with surgical and service units designed for 150 beds to facilitate expansion when need for the additional beds becomes apparent. The same organization that will conduct the drive for the Rhode Island Hospital Fund has been solicited to carry on the campaign for the Kent County Hospital which will require an estimated \$750,000.

The County Medical Society, through its committee, has taken the necessary steps for organization and has invited representative citizens to serve as a board of trustees. Heading the board is Dr. Arthur H. Ruggles, Superintendent of Butler Hospital in Providence, and also President-Elect of the Rhode Island Medical Society.

There is no reason why Kent County should not

be able to support a hospital. The 1940 United States Census shows that it has a population in excess of that of Newport County which has for several years maintained a very excellent hospital in the city of Newport. In addition, the outstanding development of voluntary hospitalization insurance through the Blue Cross in this state has resulted in an enrollment in Kent County of almost 35,000 subscribers. This percentage for the area is higher than the state average and it gives assurance that a hospital in Kent County would be adequately subsidized by the Blue Cross if by no other means.

In spite of the fact that the hospitals in the greater Providence area are planning additions and expansions it is perfectly apparent to students of the question of hospital care in this state that even the expanded facilities will be taxed in view of the increasing use of hospitals by the public generally. With no hospital services available between the Providence City line and Wakefield where the sixty-two bed South County Hospital exists, the presence of a new hospital in Kent County, third largest county in the State in area and the second ranking one in population, appears not only necessary but vitally important in the extension of medical and surgical care to the people in this State. The provisions under the federal Hill-Burton Bill will allocate but limited sums to Rhode Island for hospital buildings, and therefore it is apparent that our community developments must be by the voluntary process. The drive for funds in March for the Kent County Memorial Hospital should receive the support not only of the residents in that area, but also of those throughout the State.

RECIPROCITY IN MEDICAL LICENSURE

Inasmuch as medical licensure is reserved to the various states there is naturally a wide variation in the licensing requirements for doctors. In the matter of reciprocity there is much confusion. For example, twenty-six states recognize the medical licensure of only certain specified states. Four states have no reciprocity. In three states all applicants for reciprocity must submit to an oral examination. In two, a clinical examination is required.

One of the first constructive steps towards the possible solution of this problem, for New England at least, is the action of the Council of the New England State Medical Societies in voting to invite the Secretary of the Medical Examining Board in each of the Northeast states to meet with it in January for a discussion of this vexing situation.

The action of the Council of the New England State Medical Societies has resulted from an interesting report prepared by one of its subcommittees at a recent meeting in which several proposals were advanced, among which were the possible uni-

continued on next page

fication of state licensure requirements for medicine, the possible validation of the certificate of the National Board of Medical Examiners in all the states, possible adjustment of state to state differences in the Basic Science Laws, and some method of providing for lower reciprocity fees where they are too high. Out of the discussion of this problem the Council drafted a resolution to invite the Licensure Board Secretaries to meet in January to effect the utmost in achieving reciprocity as regards medical licensure with the other New England States.

This is the type of constructive and progressive action that should be taken by regional groups to solve the problems that have long proved stumbling blocks to individual states. Possibly the forthcoming conference next month will not solve this issue, but certainly it is making a very fine attempt to achieve such a purpose. For the most part, new legislation will not be necessary, but rather by action by the various boards of medical examiners reciprocity could be granted to physicians who meet the equal standards in the other states. If such an arrangement can be effected then there will no longer be a question as to whether medical licensure is a protective mechanism for the establishment of professional guilds or is truly a protection for the public against imposters.

SENSIBLE LEGISLATION

The publication recently by the American Medical Association of the sixth annual summary of Fourth of July injuries due to fireworks and explosions vividly presents anew the importance of sound and sensible legislation for the control of fireworks.

The medical profession had long sounded its complaint against the accident toll resulting from Fourth of July fireworks and explosives, and annually it urged the public to take some action. In 1941 the *Providence Medical News* editorially called attention to the bad Rhode Island record, and as a result of that editorial the press of the state gave the matter wide publicity. Later through the efforts of the Providence Medical Association the problem was clearly presented to leaders in our community and the cooperation of these people did much to focus the attention of the legislature on the Firework Control Law that had been placed before it for several years, but upon which no action had been taken.

In 1942 the measure was finally enacted by the assembly to ban the retail sale of fireworks and their use except by municipalities, fair associations, amusement parks, and other similar organizations, and then only by special police license. Measured in terms of safety and happiness to the citizens of

this state the law may well be considered as one of the most important works of the legislature during recent years.

In 1937 the accident toll in Rhode Island included one death, and the yearly record of hospital admissions for Independence Day injuries and burns was becoming progressively worse. For example, in 1941 there were 141 accidents reported by hospitals throughout the state, including five eye injuries, one finger loss, and three fractures. A year later, with prohibitive legislation on the books, a survey conducted by the Providence Medical Association showed only four accidents, all burns or lacerations not of a serious nature, throughout the entire state.

No studies of Fourth of July accidents in Rhode Island had been made since 1942, and therefore the latest survey by the American Medical Association is extremely interesting. It shows that in 1946 this state had but two injuries, both recorded as burns. The City of Providence had no reported accidents or injuries from fireworks, and the City of Pawtucket one of the two injuries reported. This certainly represents a sharp reversal from the safety records prior to 1942.

Thus by sensible legislation adequately enforced we have moved from the category of the state with the worst Fourth of July accident record as judged by the relation between the number of injuries and the size of the population, to the state with one of the finest records in the nation.

STATE HEALTH FEDERATION

When the House of Delegates of the Society meets in January it will be presented with a definite proposal from the Society's committee appointed last spring to study the possibility of an organization of Rhode Island health agencies. The committee has spent much time and has worked actively on the problem during the summer and fall months. That there are operating within the State many health agencies whose primary functions lie in the field of promoting health and preventing disease, and in addition other organizations carrying on combined health and welfare services, that do not correlate and coordinate their activities for the common good, is well known. Some of these agencies concentrate upon selected problems with considerable intensity and thereby become experts in their own field. However, these individual agencies in many instances are financially unable to provide themselves with services, and to undertake studies which would be of benefit to all of them. Therefore, they are unable to give adequate, well-balanced support to the programs and budgets of the official agencies responsible for the health of the community.

As it has been pointed out before, there is no common medium at present, such as a state health council, that could act as a fact-finding organization and through which discussions, continuing analyses of community needs, and unification of function as well as agency stimulation, could take place. Such an organization is necessary if we are to have a continuing and progressively sound health program.

NEW FELLOWS OF THE RHODE ISLAND MEDICAL SOCIETY

Newport:

GEORGE A. ECKERT, M.D., 130 Touro Street
DONALD B. FLETCHER, M.D., Newport Hospital
FRANK J. LOGLER, M.D., Newport Hospital
RICHARD RICE, M.D., Newport Hospital

Pawtucket:

HENRY E. TURNER, M.D., 101 Broadway

Providence:

THOMAS L. O'CONNELL, M.D., 600 Broad Street

Washington County:

JOSEPH L. C. RUISI, M.D., 41 Grove Avenue,
Westerly

Woonsocket:

JOHN A. KENNEDY, M.D., 194 Main Street
OSCAR Z. DASHEF, M.D., 202 Stadium Building

AMERICAN PUBLIC HEALTH MEETING

At the 74th annual meeting of the American Public Health Association, held in Cleveland in mid November, the Society was represented by Dr. Francis V. Corrigan and Mr. John E. Farrell. Doctor Corrigan, chief of the division of maternal and child health of the state department of health, served as vice chairman of the APHA's committee on maternal health.

Mr. Farrell, executive secretary of the Society, and a Fellow of the American Public Health Association, presided as chairman of the Eastern regional meeting on health education problems of the states along the eastern seaboard.

Recipient of a Lasker Award for outstanding medical research was the late Dr. Karl Landsteiner, father of Dr. Ernest Landsteiner of the Rhode Island Medical Society. The elder Landsteiner won a Nobel prize in 1930, the Paul Ehrlich medal in the same year, as well as the Dutch Red Cross medal in 1933, because of his discovery of blood groups which made it possible to give blood transfusions safely.

WARNING — MAY BE HABIT FORMING!

A recent opinion from Federal Security Agency, Pure Food and Drug Division, has ruled that Sections 502(d) and 503(b) relative to the marking of prescriptions (WARNING—MAY BE HABIT FORMING) must be carried out to the letter of the law.

Below are the sections of the law so that you may well understand all phases of them:

"(Sec. 502. A drug or device shall be deemed to be misbranded—) (d) If it is for use by man and contains any quantity of the narcotic or hypnotic substance alpha eucaine, barbituric acid, beta- eucaine, bromal, cannabis, carbromal, chloral, coca, cocaine, codeine, heroin, marihuana, morphine, opium, paraldehyde, peyote, or sulphonemethane; or any chemical derivative of such substance, which derivative has been by the Administrator, after investigation, found to be, and by regulations designated as, habit forming; unless its label bears the name and quantity or proportion of such substance or derivative and in juxtaposition therewith the statement "WARNING—MAY BE HABIT FORMING."

"(Sec. 503) (b) A drug dispensed on a written prescription signed by a physician, dentist, or veterinarian (except a drug dispensed in the course of the conduct of a business of dispensing drugs pursuant to diagnosis by mail), shall if—

- (1) such physician, dentist, or veterinarian is licensed by law to administer such drug, and
- (2) such drug bears a label containing the name and place of business of the dispenser, the serial number and date of such prescription, and the name of such physician, dentist, or veterinarian,

be exempt from the requirements of section 502(b) and (e), and in case such prescription is marked by the writer thereof as not refillable or its refilling is prohibited by law) of section 502(d)."

These two sections are self-explanatory; but to condense them—remember that it is necessary to place upon the container the following: WARNING—MAY BE HABIT FORMING. This inscription is required on the container of every prescription coming within these two sections of the Law, as well as refills. In other words, the only time that a druggist does not put the label of "WARNING—MAY BE HABIT FORMING" on a prescription is when the doctor marks the prescription "Not to be repeated."

Don't forget to check the dates now for the annual meeting of the Rhode Island Medical Society which will be held in Providence on May 14-15, 1947. Mark your calendar to leave these two days free to spend at your medical society sessions.

HOSPITAL ASSOCIATION OF RHODE ISLAND

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NURSING SERVICE AND THE RHODE ISLAND HOSPITAL

OLIVER G. PRATT, *Executive Director*

THE shortage of nurses is presenting a major problem to the Rhode Island Hospital and to most other hospitals on this continent. A nationwide study by the American Hospital Association in July 1946 demonstrated a need for 120,600 graduate nurses with a potential available of only 37,900 from the army and 35,600 in September graduating classes, leaving a difference of 41,700 nurses short.

This shortage is due to several factors prominent among them being shorter hours, the increase in hospitalization and the ever increasing use of nursing in specialized fields.

The various national nurses associations, the American Hospital Association and the U. S. Public Health Service have worked together on student nurse recruitment and they are today giving consideration to the total problem. The drive for students this past fall fell far short of the goal. There has been confusion as a result of the multiple objectives—of improving personnel practices, educational programs, and student recruitment. The shortage of women for routine ward duties has accentuated the problem.

Industry, public health and government agencies, including the Veterans Administration, all look to hospital nursing schools for qualified graduates.

At the present time the nursing profession is undergoing thorough study. The U. S. Department of Labor is making a comprehensive statistical review. Leaders are reviewing existing practices such as tuition charges, compensation to students, scholarships, government funds, types of schools and various levels of training for those to care for the sick.

The quality of nursing is of primary concern to hospital and nursing associations. They appreciate that the nursing care which patients receive determines in good measure the patient's opinion of the hospital.

The American Nurses Association adopted a

platform at their recent convention that includes the following points:

1. Improvement of hours and living conditions for nurses (40 hour week with no salary decrease).
2. Minimum salary adequate to attract qualified nurses, and to maintain standards of living comparable to those of other professions.
3. Work on employment of qualified practical nurses.
4. Greater development of nurses professional organizations as exclusive spokesman for nurses in all questions affecting their employment and economic security.

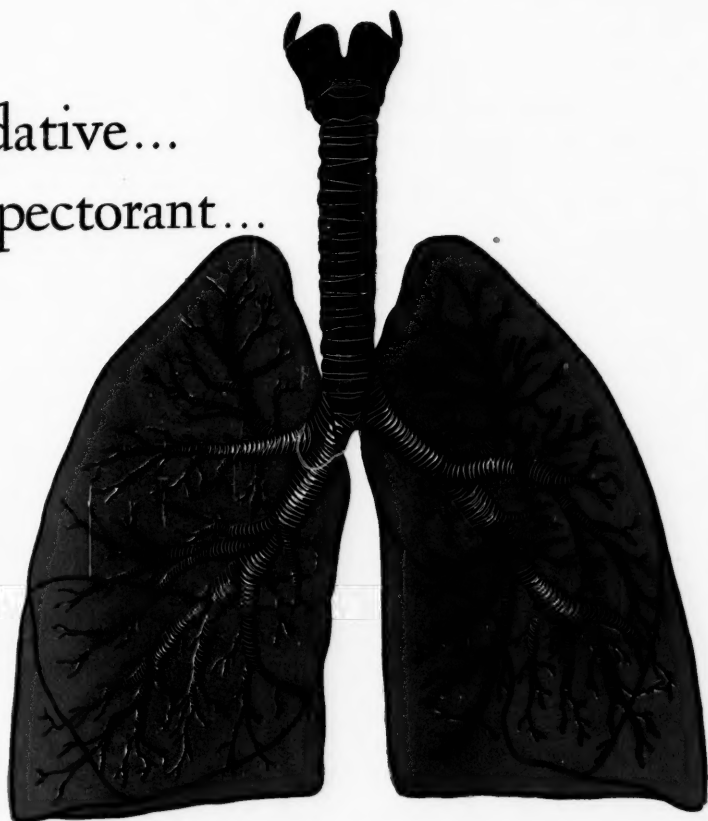
The primary objective of the American Hospital Association is to bring about continued improvement in the quality of hospital service and encouragement of all sound programs aimed at improving the distribution of such hospital care in order that it may be readily available to every citizen of the country.

The American Hospital Association and its affiliated state associations were organized for the purpose of improving hospital service. These organizations have never assumed responsibility for dictating to member hospitals, particularly in matters affecting the internal finances of such hospitals. The Association is firmly of the opinion that the matter of internal relationships between the individual hospital and its personnel is not only primarily each hospital's direct obligation but that over-all leadership and recommendation for the most enlightened attitude for improving these relationships will come, as it has in the past, from the hospitals themselves with whatever advice and counsel as the American Hospital Association and the State Hospital Associations may be able to provide.

The Rhode Island State Nurses Association sent a questionnaire to 3300 nurses—611 answered and of this number:

continued on page 924

bronchial sedative...
bronchial expectorant...



The combined expectorant-sedative action of
Lobidine (Searle) leads to amelioration of cough
and irritative symptoms accompanying and
following upper respiratory infections.

Lobidine
(SEARLE)

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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

NURSING SERVICE AND R. I. HOSPITAL

continued from page 922

- 325 desired an improved salary schedule
- 152 desired better hours
- 89 stated nurses should be given more personal consideration
- 65 desired more adequate rest rooms
- 55 desired opportunity for further education and training

In an effort to aid in improving nursing service at Rhode Island Hospital the Board of Trustees at a regular meeting on November 6, 1946, voted:

- **1. That the Board of Trustees go on record as favoring legislation to license in Rhode Island vocational, practical or attendant nurses and that the necessary steps to aid in the preparation and passage of such legislation be taken.
- **2. That the Board of Trustees approve a plan for the development of a corps of paid nurses aides, such a corps to be developed by recruitment of suitable women and giving them a training course of 6 weeks' duration. (Former Red Cross volunteer nurses aides or other women with similar training if employed will not be required to take the course.) The pay schedule for this group is to be in proper relation to other vocations or skills and to include compensation during the training period.
- **3. That the Rhode Island Hospital continue to deal with nurses as a professional group. On this basis the Rhode Island Hospital will have a schedule for staff or general duty nurses with one day off one week and a day and one-half the alternate week and with a total cash salary scale beginning at the generally accepted level of \$170 per month and increasing on the basis of merit to a maximum of \$200 a month. This is to be effective December 1, 1946.
- **4. That the Board of Trustees officially support a recruitment drive and approve the principle of financial aid or scholarships as a tool for increasing the number of nurses and improving the quality of nursing service.
- 5. That the Committee on Nursing of the Board of Trustees be authorized to represent the Board in discussion of these points and any others of a pertinent nature with representatives of the Boards of other hospitals and others interested in and with responsibility for the Public Health.
- 6. That the Board of Trustees appreciating the value of collaboration among the hospitals of Rhode Island authorize and instruct the administration to send copies of a statement rela-

RHODE ISLAND MEDICAL JOURNAL

tive to nursing embodying the votes of the Board to:

- (a) All hospitals in Rhode Island
- (b) The officers of—
 1. The Rhode Island Medical Society
 2. Rhode Island State Nurses Association
 3. The Hospital Association of Rhode Island
- (c) and later to the press.

** The Medical Staff Executive Committee of the Rhode Island Hospital on November 4, 1946, approved the principles included in these votes.

RESOLUTION ON HOSPITAL PERSONNEL
 (Resolution adopted by the House of Delegates of the American Hospital Association, October 2, 1946.

A statement of policy with respect to the relationships between hospitals and employees was passed after revision by a committee appointed during debate. This resolution is as follows:

THE PRIMARY OBJECTIVE of the American Hospital Association is to bring about continued improvement in the quality of hospital service and encouragement of all sound programs aimed at improving the distribution of such hospital care in order that it may be readily available to every citizen of the country.

HOSPITALS serve sick humanity. In the alleviation of suffering, the highest type of personal service is demanded. Hospitals, in the interest of the best service for the people of this country, should and must carry on many educational processes and stimulate research. Further, hospitals have an important part to play in public health and in health education. Hospitals function as a workshop for the physician, nurse and many other skilled professional workers and technicians. Proper care for the sick requires the utmost co-operation among these groups if the patient is not to suffer unduly. This places heavy responsibilities on hospital personnel. Yet those who serve the sick have opportunities for service and satisfaction beyond those available to any other of the employed groups.

IN ALL MATTERS the administration of hospitals stands as the representative of the general public. With due realization of the economic rights of those who serve in hospitals, the administration, in planning the economics of the hospital, must bear in mind not only the quality of service and rights of employees, but also the burden thus placed upon those who must meet the cost of hospital care which is such a vital necessity in time of illness.

continued on page 926

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menstrual
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Dexedrine therapy not only alleviates the mental depression and psychogenic fatigue which ordinarily accompany dysmenorrhea; but also, through its marked amelioration of mood, beneficially alters the patient's reaction to pain.

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Dexedrine Sulfate tablets

(dextro-amphetamine sulfate, S.K.F.)

RESOLUTION ON HOSPITAL PERSONNEL*continued from page 924*

THE AMERICAN HOSPITAL ASSOCIATION endorses the best possible working conditions for all hospital personnel and realizes the demanding service required of those who serve patients. Much has been done to improve conditions for hospital personnel. The administration of all hospitals, too, must bear in mind its dual responsibility toward those rendering hospital care and those who receive such care.

THE AMERICAN HOSPITAL ASSOCIATION and its affiliated state associations were organized for the purpose of improving hospital service. These associations have never assumed responsibility for dictating to member hospitals, particularly effecting the internal finances of such hospitals. The Association is firmly of the opinion that the matter of internal relationships between the individual hospital and its personnel is not only primarily each hospital's direct obligation but that over-all leadership and recommendation for the most enlightened attitude for improving these relationships will come, as it has in the past, from the hospitals themselves with whatever advice and counsel as the American Hospital Association and the State Hospital Associations may be able to provide.

PLATFORM FOR AMERICAN NURSING ASSOCIATION

(Reprinted from American Journal of Nursing, November, 1946)

1. Improvement in hours and living conditions for nurses, so that they may live a normal personal and professional life, specifically, action toward
 - a. wider acceptance of the 40-hour week with no decrease of salary, thus applying to our post-war conditions the principle of the 8-hour day adopted by the American Nurses' Association in 1934;
 - b. minimum salaries adequate to attract and hold nurses of quality, and to enable them to maintain standards of living comparable with other professions.
2. Provision for optimal nursing care for all, and furtherance of a positive health program in all communities.
3. Increased participation by nurses in the actual planning and in the administration of nursing service, in hospitals and other types of employment.
4. Greater development of nurses' professional associations as exclusive spokesmen for nurses in all questions affecting their employment and eco-

nomic security. Such a development should be based on past successful experience of professional nurses' organizations in collective bargaining and negotiations.

5. Removal, as rapidly as possible, of barriers that prevent the full employment and professional development of nurses belonging to minority racial groups.

6. Employment of well-qualified practical nurses and other auxiliary workers under state licensure, thus protecting both the patient and the worker.

7. Continuing improvement in the counseling and placement of nurses, to give greater stability and job satisfaction to the profession and to facilitate a better distribution of nursing service to the public.

8. Further development of nursing in prepayment health and medical care plans, in order to spread the cost of nursing service to the public.

9. Maintenance of educational standards, and development of educational resources, that nursing may keep abreast of the rapid advances in medicine and other sciences. Such development may well require federal subsidies; and contributions from foundations and other educational philanthropies.

10. Appraisals of our own national organizations, through the report of the Structure Study, and fearless action based upon such appraisal, to make sure that the nursing profession will be organized and equipped to deal most effectively with its problems and its opportunities.

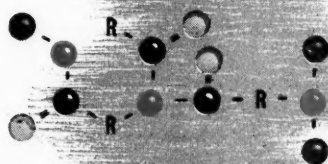
NEW ENGLAND ALLOTMENTS

The allotments to the states, on a population basis, of funds for survey and planning and for construction of hospitals under the Hill-Burton Act passed by the 79th Congress shows the following distribution to the New England states:

State	Allotments	
	Survey and Planning	Construction
	\$3,000,000	\$75,000,000
Connecticut	\$ 40,474	\$ 421,950
Maine	17,671	454,875
Massachusetts	93,515	1,595,550
New Hampshire	10,207	342,375
Rhode Island	15,989	280,275
Vermont	10,000	214,725

The American College of Physicians has announced that its 28th Annual Session will be held in Chicago, April 28 through May 2, 1947. For detailed information communications should be addressed to the Executive Secretary of the College at 4200 Pine Street, Philadelphia 4.

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Blends palatably with other foods



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ESSENAME is compatible with any food that appeals to capricious appetites... large amounts may be easily and tastily administered in hot or cold beverages, custards, cookies, bread and muffins, soups, candies, cereals, puddings, meat loafs, et cetera.* Essenamine is not destroyed by cooking.

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CLINICOPATHOLOGICAL CONFERENCE

Rhode Island Hospital

Age: 77; male

Occupation: "Retired"

Chief Complaint:

Chest pain and prostration.

Present Illness:

On the day of admission this man suffered a sudden severe chest pain, "mostly on the left" which he vaguely admitted went to the left shoulder. There was no history of previous anginal pain or cardiac decompensation. He was admitted at 10:00 P. M. and was said to have voided no urine since late in the forenoon.

Physical Examination:

Patient described as pulseless, extremely cold and cyanotic. Heart rate 102; rhythm regular; sounds of "poor quality". *Lungs:* A few moist rales at posterior left base. *Abdomen:* No masses felt. No evidence of bladder distension. *Extremities:* No edema.

Course in Hospital:

A tentative diagnosis of acute myocardial infarction was made.

Treatment included oxygen by oropharyngeal insufflation, 250 cc. of plasma intravenously and morphine sulphate grain 1/6 hypodermically.

Attempts to catheterize him were unsuccessful until the next day when about 30 cc. of urine were obtained.

He remained in shock until eighteen hours after admission. That evening his blood pressure was 116/72 but he had passed practically no urine.

On the third hospital day an output of 300 cc. was obtained and none thereafter. Temperature varied between 100 and 101 and pulse between 88 and 110 per minute. Examination on the third hospital day showed him dull with good color, coughing and raising purulent sputum. Lungs showed bilateral basal rales and abdomen was markedly distended with only occasional distant peristalsis audible. Heart rate about 100. Blood pressure 105/65, later 136/86. No edema. Fairly good dorsalis pedis pulsations. He was given 500 cc. of plasma and later 1,000 cc. of 10% dextrose in water. During this infusion he went into an attack of acute pulmonary edema and was treated

with oxygen and tourniquets to the extremities with improvement. An x-ray of chest was taken before this episode.

On the evening of the third hospital day the blood pressure was recorded as follows: 5:30 P. M. 140/70; 11:00 P. M. 130/72. Pulse at apex 92. During the next hour he became restless, respirations became labored and blood pressure at midnight was 86/60. At 2:00 A. M. blood pressure 66/44; pulse 126; respirations 32. He was treated with 250 cc. of plasma at 2:00 A. M. and again at 3:15 A. M. Coramine was also given. Cheyne-Stokes respirations were noted at 3:50 A. M. and at 4:10 respirations ceased.

After his death a vague history of his having been "struck and spun around" but not knocked down while helping in the removal of a stump.

Laboratory Work:

Second Hospital Day: Urea nitrogen 52 milligrams; Glucose 115 milligrams; Creatinine 4.7 milligrams; Hinton negative.

Third Hospital Day: Urea nitrogen 56 milligrams; Creatinine 5.7 milligrams; chlorides 304; Sodium chloride 500; Carbon dioxide combining power 43 volume %. Urine: Straw colored; Specific gravity 1.010; Reaction acid; Protein 1+; Sugar negative. Sediment: 10 leucocytes per high power field and a few coarsely granular casts.

X-Ray—March 29, 1946:

Chest: Relations of the mediastinum and heart are distorted on account of patient's rotation. Both lungs show fine infiltration throughout the distribution increasing in prominence towards the base where the shadows are somewhat patchy. On the left side the diaphragm is not seen clearly. Right diaphragm is sharp. Aortic arch is tortuous and prominent. The cardiac outline seems somewhat enlarged. Appearances in both lungs are suggestive of vascular congestion and scattered pulmonary edema. Question of slight pleural effusion at the left base. The possibility of bilateral bronchopneumonia cannot be excluded. Urinary tracts: No definite urinary calculi seen. Both kidney outlines not seen clearly on account of haziness of upper abdomen. Moderate amount of gas scattered throughout colon to lower sigmoid. Several

continued on page 930

Fiberglas Cloth Used Experimentally For Postoperative Wound Dressings

Fiberglas materials have been shown to be uniquely suited to certain medical uses through their experimental application by physicians, surgeons and others engaged in medical research.

The quest for an ideal packing material for post-operative care of compound wounds, for example, was based upon a number of qualifications.

ESSENTIAL FACTORS

Such an improved dressing must allow proper drainage and granulation of the wound so that an early split-skin graft can be applied if desired. It should be non-irritating to the skin and should not act as a foreign body if left embedded in human tissues. It should prevent adherence of granulations and prevent exuberant granulation. It should not cause pain or excessive bleeding on removal, and should be simple to prepare and use.



United States Army Signal Corps Photo.

Shoulder wound, three weeks after saucerization of the cavity. (a) Fiberglas Cloth may be seen on the wound surfaces. (b) No granulations are growing through the meshes.

After consideration of these factors, Fiberglas Cloth was tried experimentally at the Percy Jones General Hospital, Battle Creek, Mich., in thirty-five cases where ordinarily petrolatum-impregnated gauze would have been used.

METHOD OF APPLICATION

In applying the dressing at the time of surgery, a square of glass cloth is cut large enough to cover all surfaces of the wound and to project over the skin margin. The center of the invaginated glass cloth should be packed with dry cotton gauze to hold open the edges of the wound and to act as a wick to remove exudate. A pressure bandage or padded cast, as indicated, is placed over such a dressing.

These Fiberglas dressings were left in the wound for varying periods of time. The report in the *Journal of Bone and Joint Surgery** says, "contra-



United States Army Signal Corps Photo.

The same wound (a) after removal of Fiberglas Cloth, showing clean granulations and no bleeding or thick exudate.

indications have not been observed". Fiberglas Cloth was also tried as the first layer of a wet dressing for a split-skin graft. By such experimentation, the uses of Fiberglas in medicine are being established.

Fiberglas is the trade name of a variety of products made of glass fibers. Glass textile fibers, made in diameters from two to four ten-thousandths of an inch are formed into yarns which are woven into a wide variety of textiles.

Fiberglas is an inorganic, non-toxic, non-allergenic, non-sensitizing and chemically-stable material that produces no harmful effect upon human tissue. These fine fibers are pliable and possess great tensile strength. They have dimensional stability, are unaffected by temperature extremes, corrosive fumes and most acids. They are non-hygroscopic and non-combustible, and may be easily sterilized and re-sterilized. In a special glass formula, they are radiopaque.

*Vol. 28, No. 1, pp. 180-181, January, 1946.

Some Other Uses of Fiberglas in Medicine

For some time, it has been the policy of Owens-Corning Fiberglas Corporation to supply samples of Fiberglas in any available form to qualified persons engaged in research. Write Owens-Corning Fiberglas Corporation, 2036 Nicholas Bldg., Toledo 1, Ohio.



OWENS-CORNING
FIBERGLAS

U. S. PAT. 2,147,147

CLINICOPATHOLOGICAL CONFERENCE

continued from page 928

loops of distended small intestine in the mid-abdomen. Appearances not characteristic of obstructive ileus. Multiple phleboliths on both sides of the pelvic cavity. Sickie shaped calcifications seen projected over upper portion of the right sacral wing possibly a sclerotic process in the bone itself.

Electrocardiogram: March 28, 1946

The tracing shows a normal sinus rhythm. The P-R interval is normal. There is minimal elevation of the ST interval in the third lead. The T waves are normal throughout as are the chest leads. The tracing shows no diagnostic abnormality. Rate 92.

Clinical Discussion: DR. ROBERT G. MURPHY

In summary this elderly man's illness was characterized by dramatic onset with thoracic pain, circulatory collapse and shock which improved some with treatment. An interesting feature was the most complete anuria which may be an important clue to the diagnosis. On the eventful fatal third hospital day in the evening, another phase commenced with dyspnea, restlessness, falling blood pressure and death four hours after the beginning of this change. I would like to call attention to the history of trauma which was obtained after his death. I believe that this was about five days before the onset of this fatal illness.

Laboratory work showed increasing nitrogen retention and abnormal urinalysis. One would like to know the white count and particularly the red count or hemoglobin as it is suspected there was a significant degree of anemia. The x-rays are helpful as the relation of the mediastinum and heart are distorted. The aortic arch was tortuous and prominent and the cardiac outlines seemed somewhat enlarged. The lungs showed vascular congestion and scattered pulmonary edema. There was a question of slight pleural effusion at the left base.

An x-ray of the abdomen showed distended loops of small intestine which were probably paralytic ileus as they were said not to be characteristic of obstructive ileus. The electrocardiogram is interesting chiefly because it was not characteristic of myocardial infarction, pericarditis or pulmonary embolism. With the history of severe chest pain followed by shock and circulatory collapse one quite naturally considers the diagnosis of acute myocardial infarction. However, there is nothing further to support this diagnosis such as characteristic electrocardiograms, precordial friction rub or past history of angina.

It is said that the following conditions are often misdiagnosed as myocardial infarction: Penetrat-

RHODE ISLAND MEDICAL JOURNAL

ing peptic ulcer, acute cholecystitis, acute pancreatitis, laceration or perforation of the esophagus, mediastinitis, pericarditis, pleuritis, spontaneous pneumothorax and pulmonary embolism or thrombosis. I think that these conditions can be ruled out for one reason or another by the lack of characteristic physical signs, x-rays, electrocardiograms or clinical course. Probably the most difficult to rule out is pulmonary embolus or thrombosis as the x-ray of the chest was abnormal but did not show typical pulmonary infection. However, there was no hemoptysis, pleural friction rub, characteristic electrocardiographic findings or a known site from which the embolus might originate, such as thrombophlebitis.

In the differential diagnosis we then come to a consideration of aneurysm of the aorta. The Hinton was negative. There were no previous signs or symptoms of a saccular or fusiform arteriosclerotic or syphilitic aneurysm. This type of aneurysm is not shown in the x-rays we have of the chest and abdomen. I would expect that if this type of saccular fusiform aneurysm ruptured that the fatal terminus would occur more quickly and would not have a clinical course of three days. Therefore, I believe that the dissecting aneurysm of the aorta best explains the signs, symptoms, laboratory, x-ray findings and clinical course. For this condition to occur the first requisite is arteriosclerosis of the aorta. I think we have good evidence for this. Weakening of the wall occurs because of sclerosis of the vas vasorum of the media. The second requisite is the existence of increased tension within the aorta. This may have been supplied by a previously unrecognized hypertension or by the trauma mentioned in the history. Often these progress in two stages: The first is due to the initial tear in the intima and the dissecting blood column proceeds proximally toward the heart or distally down the aorta toward the bifurcation. The most common sites for this tear in the intima are in the aortic arch either just above the valve or at the attachment of the ligamentum arteriosum. This first stage is often attended by chest pain, collapse, cyanosis, pulmonary edema, congestion, and bronchopneumonia. Pleural effusion commonly occurs on the left side but may be first serous and later hemorrhagic. As the dissection proceeds down the aorta, small blood vessels are cut across and larger ones are closed by the hemorrhage invading the wall of the arteries. If the mesenteric arteries are involved, paralytic ileus often occurs.

There is often also evidence of kidney disease as was present in this case and may be due to antecedent kidney disease or to dissection and blocking of the renal arteries. If the carotids are invaded there are cerebral symptoms which were not present in this case and if the iliac arteries are invaded

there is usually pain in the legs, absent pulsation in the arteries and temperature and color changes in the extremities. Encroachment on the ostia of the coronary arteries may give electrocardiographic changes characteristic of acute myocardial infarction. This also did not occur. If a second rupture occurs back in the lumen of the aorta, this condition is not incompatible with life and results in a so-called double-barreled aorta. The second stage which could be represented by this patient's sudden change on the third hospital day occurs when the second rupture occurs into the mediastinum, precordium, pleural cavity or retroperitoneally.

Pathological Diagnosis:

Saccular aneurysm of abdominal aorta, with rupture.

Massive retroperitoneal hemorrhage.

Hemoperitoneum.

Discussion of Pathology:

DR. ROBERT J. WILLIAMS

The essential anatomical findings were limited to the abdomen. When the peritoneal cavity was opened there were 300 cc. of fluid and clotted blood present. The retroperitoneal spaces on both sides of the vertebral column throughout the entire length of the abdomen were distended by a massive amount of fluid blood and currant jelly blood clot. The origin of this hemorrhage was a saccular aneurysm of the lower abdominal aorta which had ruptured. This is a different type from the dissecting aneurysm of which Doctor Murphy spoke. It was located in the abdominal aorta just above its bifurcation. It presented itself in a saccular form 8.5 cm. in diameter. A brownish-red adherent blood clot partially filled the sac, but did not occlude the lumen of the aorta. It had a laminated appearance on its cut surface. There were three ragged defects in the posterior wall of the aneurysm which communicated with the retroperitoneal space. The aneurysm was localized and there was no dissection of the wall of the aorta. There was present a large amount of arteriosclerosis of the aorta, which would account for the development of the aneurysm.

The clinical story indicates that the leakage of blood into the retroperitoneal space occurred over a period of at least several days.

There were no other significant pathological findings.

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the health needs of Main and Elm. The American practitioner, trained in freedom's tradition and alert to the new, sees to that. He is the bridge between the laboratory and the patient's bedside.

More... he is a member of that great profession... the physician... on whose initiative depends the interchange of medical experience between himself and his colleagues.

IN the scientific Ciba laboratories at Summit, New Jersey, we produce many of the fine pharmaceuticals of today. But even our medical scientists would be helpless in bringing their discoveries to bear on our national health—were it not for the practitioner's spirit of free inquiry... unfettered initiative.



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THE PATHOLOGICAL INSTITUTE AND THE COST OF MEDICAL CARE

JOHN F. KENNEY, M.D., F.A.C.P.

The Author. *John F. Kenney, M.D., F.A.C.P., of Pawtucket, R. I. Diplomate, Board of Internal Medicine; Consultant to Rhode Island hospitals; Past President, Rhode Island Medical Society.*

I WILL attempt in this paper to bring out two points. First, that a pathological institute in either a small or a large community makes for more efficient diagnosis and, therefore, better medical care. Secondly, if properly and efficiently used, it will act in lowering the cost of medical care and supply a need that many of the plans, both government (state medicine) and medical society, that are advanced over different sections of the country do not cover.

Briefly, what is a pathological institute? It is a center set up in a locality most convenient to the larger hospitals and is either underwritten by a group of private individuals or philanthropists, or a foundation, or underwritten by the government or state, or run by the medical profession and member hospitals utilizing the already existing facilities. (This latter is our R. I. Pathological Institute set-up.) It may even be located in one of the larger hospitals in the community as a temporary means until such buildings and proper facilities have been established.

We have our pathological institute already established in the largest hospital in the state and it has started with four member hospitals. Contrary to the belief that it is only to the advantage of the smaller hospitals, the larger hospitals benefit as well. Combined this way, the group can necessarily afford a more efficient, higher paid personnel, with each member hospital contributing to its support, and, therefore, the larger hospitals are able to employ better personnel than if working alone. It is a distinct advantage for small hospitals that may have inefficient personnel and to them is made available expert advice in the fields of pathology, bacteriology and chemistry by experts when ordinarily they would have no laboratory facilities at all or would be under the direction of one man who is often underpaid trying to cover all of the above fields.

The parent institute sends out to each member hospital by rotation the various trained experts in the different fields so that some one of these experts is on hand in a member hospital. The pathological institute eventually training residents who will be farmed out to the member hospitals and brought back repeatedly for training, is also an advantage to both the larger and the smaller hospitals. Again, all the technicians working in the member hospitals are called to the parent institute by rotation for several months at a time, their places in the hospitals being taken by technicians sent out by the main institute or laboratory.

The best argument in view of all this is that surgery and medical conditions are the same for the person in the small community as well as in the large, and treatment, whether medical or surgical, is so often based on accurate diagnosis. Therefore, the patient in the small area is entitled to the same procedures as in the larger areas, and should not have to be sent to a large center to have either medical or surgical treatment and particular diagnosis when it can be carried out in his own area.

Coming to the second advantage—that is lowering of the cost of care—many patients are sent to hospitals for diagnosis using up the beds, particularly in these times, that are badly needed for all kinds of medical and surgical treatment. Patients not able to afford rooms have been sent to the wards thus overcrowding. The physician feels that the cost to the patient for laboratory work may be beyond his means or that the physician does not have the equipment in his office, the technical help or space to do it personally. We have commercial laboratories but the cost of the individual test in some cases for diagnosis amounts to a large sum, frequently equalling the cost of the treatment and the physician hesitates to ask the patient to assume this cost, hence the hospital. If I might cite one example, a case of suspected pernicious anemia, presents herself to a physician's office. If the diagnosis could be definitely made such a case could be treated without any hospitalization, but it often requires complete blood work, stomach contents, blood volume, etc., that the physician is not prepared to carry out in his office. If each physician

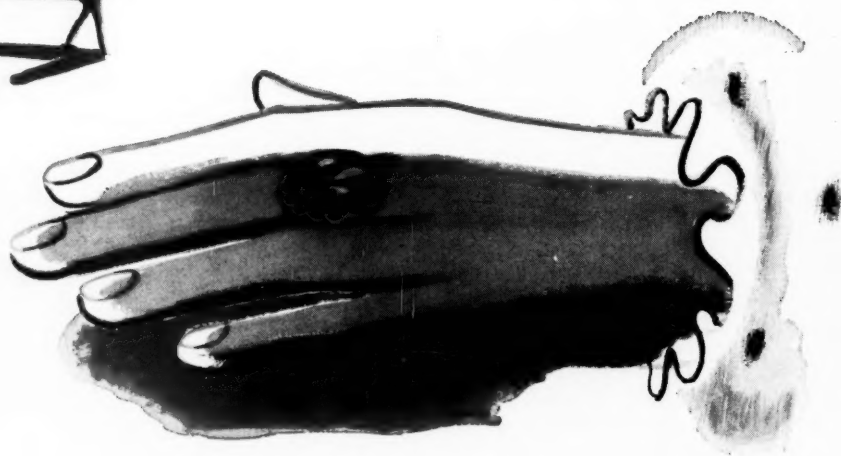
continued on page 956

SYMBOLS OF SIGNIFICANCE

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DISTRICT SOCIETY MEETINGS

NEWPORT COUNTY MEDICAL SOCIETY

A MEETING of the Newport Medical Society was held on Tuesday evening, October 29, 1946, at the Newport hospital.

The meeting was called to order at 8:52 p. m., with Dr. Alfred M. Tartaglino presiding, and the following Doctors in attendance: Tartaglino, Young, Bestoso, Stoops, Ciarla, Zielinski, Tollefson, Grimes, Jerech, Adelson, Ramos, Mayner, Malone, Abramson, and Brownell.

The minutes of the June meeting were read and approved.

There was no unfinished business or communications.

The applications for membership for Drs. Frank Logler, George Eckert, Donald Fletcher, Edward Zamil, and Richard Rice, which had been passed by the censors, were presented and the five were elected.

Following the election, there was some discussion as to the by-laws of the Society which state that the physician should be in active practice in the county for a period of one year prior to applying for membership in the Society. It was pointed out that the rule had been waived by common consent over a considerable period of years, and that adherence to the rule would work considerable hardship on a physician, since membership in the Society was tantamount to hospital privileges at the Newport Hospital. It seemed generally agreed that the rule should not be invoked but that physicians should be in actual practice in the county before submission of application to the Society.

The speaker of the evening, Dr. Clifton B. Leech, of Providence, was then presented, and in a very enlightening and complete discourse covered most of the important advances in the treatment of cardiovascular renal disease of the past decade.

Following a period of questions and answers the meeting adjourned at 10:35 p. m. A collation was served.

HENRY W. BROWNELL, M.D., *Secretary*

WOONSOCKET MEDICAL SOCIETY

A meeting of the Woonsocket District Medical Society was held at the Club Canadian on Tuesday,

November 12, 1946. The meeting was called to order at 9:30 p. m. by President Joseph Reilly.

The main discussion of the meeting was that of group disability insurance as presented by a representative of the Commercial Casualty Insurance Company.

The secretary presented the applications for active membership in the Society of the following physicians: Oscar Z. Dashef, M.D., 202 Stadium Building; John A. Kennedy, M.D., 194 Main Street; Elphege Beaudreault, 441 South Main Street.

It was moved that these applicants be elected to membership. The motion was seconded and unanimously adopted.

A collation was served after which the meeting adjourned at 12:10 p. m.

ALFRED E. KING, M.D., *Secretary*

PROVIDENCE MEDICAL ASSOCIATION

A regular meeting of the Providence Medical Association was held at the Medical Library on Monday, November 4, 1946. The meeting was called to order at 8:30 p. m. by President Paul C. Cook.

The reading of the minutes of the previous meeting was omitted by approval of the members present.

The Secretary read a communication from the Providence Chapter of the Red Cross as follows:

"According to reports a somewhat serious epidemic of influenza is anticipated this winter. In view of the shortages of doctors, nurses and hospital beds, the importance of the free Red Cross courses in Home Nursing is greater than ever.

"An aftermath of the war seems to be evidenced in public apathy toward volunteering or participating in free class instruction. The Red Cross teaches home nursing by means of a streamlined, 6 2-hour lesson course on—

1. What to do when sickness occurs
2. How to make the patient comfortable in bed
3. How to keep the patient clean and well groomed
4. How to give food and medicine that have been ordered for the sick in the home

continued on next page

5. How to give simple treatments ordered by the doctor
6. How everyday skill in the care of the sick helps to control the spread of communicable diseases.

"It has been suggested that one effectual way of arousing public interest in availing themselves of this offer is to bring the matter to the attention of the medical men of our community, who in turn may urge their patients to enroll as Home Nursing students. By so doing, they will be helping to relieve the strain under which so many are working and also will be insuring more intelligent care of patients, particularly at the onset of illness when proper early care may be the means of avoiding more serious complications."

The secretary also read a communication from Grace Church in Providence extending invitation to the physicians of the Association to attend the morning service on November 17 at which Edward H. Hume, M.D., is to speak.

Dr. Paul C. Cook announced that the public service engineer of the City of Providence had requested that the Association appoint a committee to meet with him to discuss the automobile parking situation in the Waterman-Angell Street area. Dr. Cook announced the appointment of the following committee for this assignment: Dr. Clifton B. Leech, Chairman; Dr. Elihu S. Wing, Dr. A. A. Savastano, Dr. Frank W. Dimmitt and Dr. Robert G. Murphy.

Dr. Cook briefly discussed the great significance of the atomic bomb, and its possible effect upon medical procedures in the future. He then introduced Dr. Shields Warren, Pathologist at the New England Deaconess Hospital, who was one of the physicians who participated in the medical research of the atomic bombing in Japan, and was also one of the observers of the post-war atomic tests in the Pacific. Dr. Warren discussed "Medical Aspects of Atomic Bombings" illustrating his lecture with lantern slides of scenes taken at the sites of the bombings.

In summarizing what is known about the subject to date, Dr. Warren pointed out that the products of atomic fission are, as yet, of little practical use in the treatment of disease. However, radioactive isotopes, which are by-products of atomic fission, are useful as tracer substances in clinical investigation. For example, by the use of radioactive phosphorous, this element can be detected in amounts approximating 10-14 grams. Another clinical problem that has been investigated by this means is the question of insulin resistance. By using tracer zinc combined with insulin, it has been demonstrated that many instances of insulin resistance are due to poor absorption from the site of injection associated with local fibrous tissue. In discussing the atomic bomb, Dr. Warren pointed

out that in addition to the explosive force evident with other types of bombs, there is thermal radiation and ionizing radiation which are produced.

The speaker described his experiences in Japan and at Bikini and illustrated many of the points by lantern slides. The thermal burns produced by the bombs are characterized by extremely sharp lines of demarcation. In the use of nuclear energy, the residual radioactivity in objects that are exposed to the radiation, poses a real problem.

Following his presentation Doctor Warren answered many questions directed to him from the audience.

The meeting adjourned at 10:20 p. m. Attendance—140. Collation was served.

FRANK B. CUTTS, M.D., *Secretary*

R. I. Regional Committee on Fractures and Other Traumas

—*American College of Surgeons*—

The meeting of the Rhode Island Regional Committee on Fractures and Other Trauma was held at the Medical Library, Francis Street, Providence, R. I., on November 18, 1946. It was called to order by the Chairman, Dr. Henry McCusker at 8:40 P. M.

Dr. McCusker expalined briefly the aims and object of the Regional Committee, stating that it was mainly educational in regard to the proper care and treatment of fractures and particularly applicable to the smaller hospital groups.

He then outlined the requirements and suggestions of the National Committee in respect to meeting, reports and sub-committees. After a general discussion the following committees were appointed.

1—Membership Committee

Dr. Robert T. Henry, *Chairman*
Dr. William A. Horan
Dr. Henry McCusker

2—Committee on Clinical Meetings

Dr. Louis Sage, *Chairman*
Dr. James C. Callahan
Dr. Walter J. Maloney
Dr. Armand A. Bertini
Dr. James R. McKendry

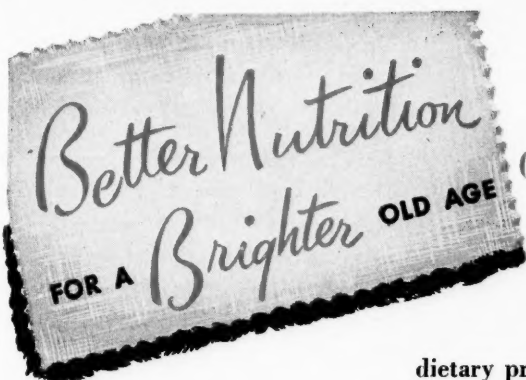
3—Committee on Hospital Care and Equipment

Dr. John Paul Jones, *Chairman*
Dr. Augustine Eddy
Dr. S. G. Lensner
Dr. S. S. Farago

4—Committee on Relations with Other Organizations

Dr. Peter Pineo Chase, *Chairman*
Dr. Kenneth Burton
Dr. Arthur Martin
Dr. William A. Stoops

continued on page 940



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RHODE ISLAND MEDICAL JOURNAL

**REGIONAL FRACTURE COMMITTEE
MEETING**

concluded from page 938

**5—Committee to Consider the Advisability on
Assembling Syllabus for Accident Room
Treatment of Fractures**

Dr. Ernest D. Thompson, *Chairman*

Dr. William V. Hindle

Dr. John H. Gordon

Delegates to the fracture section at the Cleveland meeting of the American College of Surgeons December 16-20, 1946: Dr. James R. McKendry, Dr. Robert T. Henry.

Dr. Carroll M. Silver was commissioned to review Key and Conwell's latest revision of "Fractures, Dislocations and Sprains" for Dr. Chase; the same to be published in the book review in the R. I. MEDICAL JOURNAL.

Attendance — Drs. Chase, Gordon, Henry, Hindle, Horan, McCusker, McGovern, McKendry, Sage, Silver, Thompson.

ROBERT T. HENRY, M.D., *Secretary*

R. I. Chapter, Gastroenterological Association

The Rhode Island Chapter of the Gastroenterological Association had the quarterly meeting at the Hope Club on November 6th, 1946 at 6:30 P. M.

Dinner was served and following this the chapter was addressed by Dr. William Reid Morrison, Surgeon-in-Chief of the Boston City Hospital, on the subject entitled "Double Vagotomy for Intractable Ulcer". This paper was discussed by Dr. McClure, gastroenterologist at the Boston City Hospital, and Dr. Frank Cummings of Providence, Rhode Island. Dr. Tage Christiansen, chairman of the Gastroenterological Society of Copenhagen, Denmark and delegate of the Danish Ministry of War to the United States, then addressed the chapter telling about the plight of the people of northern Europe in general and of the medical profession in particular. Dr. Jesse P. Eddy, III, presented a case of total gastrectomy and subtotal transverse colectomy for an acute perforated malignant ulcer in a carcinomatous stomach, linitus plastica in type. Careful search of the literature had failed to reveal a similar case having been reported in the past. Approximately one hundred subtotal gastrectomies have been done for acute perforated ulcer, but no case of total gastrectomy has been found to date.

Following remarks for the good of the chapter, the meeting was adjourned.

JESSE P. EDDY, III, M.D., *Secretary*

MEDICAL CARE THROUGH PREPAID INSURANCE

IN submitting this report to the Council of the New England State Medical Societies the subcommittee has relied on information submitted to it by representatives in the various states. The progress of medical care plans sponsored by the state medical societies is summarized by states as follows:

Massachusetts

Massachusetts Medical Service, a non-stock corporation, came into being on June 2, 1942, under an enabling act approved May 22, 1941, with twenty-three physicians as incorporators.

General administration of the Act is delegated to the Commissioner of Insurance who must approve in writing all subscription agreements, participating physician agreements, subscription rates and schedules of fees. He may also limit acquisition and administration costs and require that a special contingent surplus be accumulated and maintained. Massachusetts Medical Service was required to set aside 25 per cent of its monthly subscriber income until a surplus of \$225,000 had been accumulated, and this was done. Its acquisition and administration costs have never been limited.

The majority of the board of directors must be persons approved in writing by the Massachusetts Medical Society. Any registered physician has the right to participate provided he is willing to abide by such rules and regulations as the corporation makes.

As a charitable corporation Massachusetts Medical Service is exempt from all state and local taxes. However, because the budget of the commissioner of insurance did not provide funds for him to exercise properly the responsibilities delegated to him by the Act, the proponents of the bill agreed to a 1 per cent tax on subscriber income. For the year 1945 the Corporation returned approximately \$10,000, which sum would appear to be somewhat in excess of the costs incurred by the Department of Insurance in supervising the activities.

Although the enabling act provides that a majority of the Directors must be approved by the Massachusetts Medical Society, it has been the practice for the Society to nominate all fifteen of the non-salaried directors, one-third of whom must be licensed physicians.

Membership: Two classes of members—unlimited and limited—are designated. An unlimited (under-income) member is any subscriber without dependent members whose total annual income is \$2,000 or less, or any one of a family group the total annual income of which is \$2,500 or less. A limited (over-income) member is one whose annual income exceeds these respective amounts. Annual income is defined as the total income from all sources during the twelve-month period immediately preceding application for benefits and it has been construed to include other than cash income.

Services: The unlimited (under-income) member is entitled to "service benefits", which means that for services rendered under the terms of the subscriber certificate a participating physician accepts direct payment from the Corporation as full discharge of the obligation. The limited (over-income) member is entitled to "indemnity benefits", meaning that although the Corporation extends its usual payment to the participating physician, he is not barred from making an additional charge, which is a private matter between the member and the participating physician and in no way involves the Corporation.

To be eligible for medical services, which are services of a general medical nature, a member must be a hospitalized bed patient. Surgical services encompassing all generally accepted surgical procedures are available both in and out of the hospital during twenty-one days per illness or injury. Obstetrical services, available either in or out of the hospital during twenty-one days per agreement year, are normal or abnormal delivery of a live or dead fetus of seven or more months' gestation, prepartum and postpartum care during confinement, treatment of toxemia of pregnancy and routine care of a full-term or premature newborn. Accidents of pregnancy which accrue prior to the seventh month of gestation are covered by surgical services.

Anesthesia services are provided when they are directly related to medical, surgical or obstetrical services furnished by the Corporation. The allowance for diagnostic x-ray is \$15 per illness or injury.

Relations with Blue Cross: By agreement the Blue Cross undertakes to (1) furnish office space

continued on next page

MEDICAL CARE THROUGH PREPAID INSURANCE

continued from previous page

for personnel serving both corporations; (2) supply services necessary for the acquisition of subscribers; (3) provide all administrative services, including billing, accounting and general operating supervision; (4) render bills on all outstanding Blue Shield memberships and use its best efforts to collect all such accounts receivable; (5) use efforts in the acquisition of subscribers to Blue Shield similar in kind and degree to and consistent with its own acquisition policy, and consult with Blue Shield with respect to general program and detail.

Enrollment: Total enrollment at the end of 1943, the first year of operation, was 21,188 members. At the end of 1944 the figure was 69,874; at the end of 1945, 206,729. By the middle of 1946 there were 300,000 members and additions were being made at the rate of 20,000 a month.

Financial experience: Operations were begun in February of 1942 with a loan of \$25,000 from the Massachusetts Medical Society. The Corporation has never been in financial difficulty and its surplus at the end of three and a half years of operation was almost \$600,000.

New Hampshire

The New Hampshire Physicians Service, according to all reports, continues to operate most

successfully. The plan supplies broader coverage than is attempted by most medical plans, offering services in the hospital, office, or home. Contracts are written on an indemnity basis, but for the low income group the coverage is essentially a service coverage, since there is an unwritten agreement by the participating physicians that for patients who fall into this category the physician's fee should not exceed the benefit allowance. There has been continued fine cooperation in carrying out this understanding.

Under the surgical contract the subscriber is covered for service in hospital, office, or home according to the allowances stipulated in the schedule of benefits, for maternity care after the first year. The medical contract is offered only as a rider to the surgical contract and it provides benefits of \$2 per hospital or office call and \$3 per home visit. The first two calls in any one illness are excluded from coverage, and the number of calls per year is limited to twenty-five for the subscriber and fifteen for each dependent.

Under either contract the subscriber is entitled to an indemnity of \$25 for x-ray examination and \$15 for laboratory examination in any one contract year, and under the surgical contract an allowance of \$10 is made for anesthesia.

Blue Cross Relations: The Blue Cross organization is the fiscal agent for the New Hampshire

continued on page 946

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Wier, F. A.: Clin. Med. & Surg. 43:217.

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MEDICAL CARE THROUGH PREPAID INSURANCE

continued from page 944

Physicians Service, the same director serving both corporations. Expenses are prorated in proportion to subscriber income.

Vermont

On October 5, 1945, the Vermont State Medical Society's House of Delegates approved the establishment of a non-profit corporation for prepaid surgical and medical care by the Vermont State Medical Society. On January 13, 1946, the Council of the Society set up a committee to take the necessary steps to put such a plan in operation, and recommended certain principles as the basis for the plan.

On April 11, 1946, the Secretary of State of Vermont issued Articles of Association to the Vermont Physician Service, Inc., a non-profit corporation formed under a pre-existing special enabling act, to offer medical and surgical coverage to the people of this state. The first meeting of the Board of Trustees was held May 6, 1946, and a temporary office was established in the headquarters of the Vermont State Medical Society at Rutland. The contracts, rates, etc., as used by the New Hampshire Physician Service were approved.

On June 8, 1946, negotiations were instituted with the New Hampshire-Vermont Hospitalization Service (Blue Cross) for the coordination of the activities of the two organizations. At the special session of the Vermont Legislature late in September, passage of an amendment to the enabling act was procured, so that the New Hampshire Physician Service could operate in Vermont. As a result of this legislation, it is now planned that the New Hampshire Physician Service will change its name to New Hampshire-Vermont Physician Service and proceed to qualify with the Vermont Commissioner of Banking and Insurance. The Vermont State Medical Society will secure representation on the Board of Directors of this organization, and the enrollment and administration will be done under contract by the New Hampshire-Vermont Hospitalization Service. The practical effect is a merger of the Vermont Physician Service, Inc., with the New Hampshire Physician Service.

Inasmuch as the New Hampshire-Vermont Hospitalization Service (Blue Cross) is already engaged in issuing contracts for hospitalization in Vermont, it is expected that there will be practically no delay in issuing surgical and medical contracts, once the necessary formalities are completed.

Rhode Island

Enabling legislation to permit the forming of a non-profit medical service corporation was passed

RHODE ISLAND MEDICAL JOURNAL

by the Rhode Island General Assembly. The act provides among other things that no articles of association for a non-profit medical service corporation shall be filed in the office of the Secretary of State unless and until the Governor of this State shall have certified in writing upon such articles that he has determined the public convenience and advantage will be promoted by the establishment of such corporation and that the filing of such articles has the approval of the Rhode Island Medical Society as evidenced by an affidavit of the president and secretary of such society.

A study committee elected by the House of Delegates of the society selected five representative citizens to assist it in its work. The findings of this group urging close cooperation with the Blue Cross in order that the common efforts of the two organizations might not be duplicated, were accepted by the House of Delegates. Subsequently the society authorized its president and its secretary to file an affidavit with the Secretary of State giving permission to Blue Cross to amend its articles of incorporation so that it might be a medical service corporation.

Under this arrangement, permitted by the enabling act, Blue Cross would add a surgical rider to its hospitalization contract, and one corporation would administer both plans. To provide larger medical representation on the board of directors of the Corporation an agreement was made that one of every four directors shall be a doctor of medicine elected by the Rhode Island Medical Society. Provision was also made by agreement that the schedule of indemnity benefits, and any changes to it, shall remain always under the jurisdiction of the medical society.

A steering committee composed of representatives of Blue Cross and the Medical Society worked out details for the surgical program calling for services in and out of the hospital. A schedule of indemnity benefits (the plan would be a service plan for those within an annual \$2,500 income, and above that amount an indemnity plan) was drafted, accepted by the society and the Blue Cross. The subscriber contract and physician agreement were drafted by Blue Cross.

However, in its surgical rider Blue Cross included wording that indicated that osteopathic physicians would be accepted by it as participating physicians. This development has prevented the inauguration of the program this fall, as the Medical Society has ruled, through its House of Delegates, that it considers the plan it has drawn jointly with the Blue Cross to be one that should be restricted, as regards participating and non-participating physicians, to doctors of medicine licensed by the state board of medical examiners. The

continued on page 948



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MEDICAL CARE THROUGH PREPAID INSURANCE

continued from page 946

requirement has not as yet been accepted by the board of directors of the Blue Cross who are trying to effect some compromise.

If this difficulty is cleared the surgical plan in Rhode Island could be initiated in the immediate future, as all other preliminary details, other than the signing of participating physicians, have been completed.

Connecticut

The State Medical Society has had committees surveying this subject since 1938 and a number of productive steps have been taken.

The first definite action after long study was a resolution by the House of Delegates of the Society that the Committee on Prepaid Medical Service proceed with the development of a cash indemnity plan to be operated by a corporate insurance company. Progress was being made in this direction when the agent for the company concerned became acutely and seriously ill and his recovery uncertain (he has since recovered fortunately).

Next, the Society's Committee proceeded with the organization of Connecticut Medical Service as is permitted by legislation in this State. The organization was not actually incorporated but had already filed papers of incorporation pending certain other developments.

Connecticut Medical Service then entered into negotiations with Connecticut Hospital Service (Blue Cross) seeking the cooperation of Connecticut Hospital Service as the seller and administrative agent for a cash indemnity prepaid medical service, the contract for which had been prepared. The medical service was to be underwritten by a separate non-profit corporation with its own board of directors and capital structure.

Negotiations between Connecticut Medical Service and Connecticut Hospital Service went on for many weeks and finally (about three or four weeks ago) Connecticut Hospital Service informed us that it was not interested in cooperating with Connecticut Medical Service (the Medical Society's Medical Service Plan) in the promotion and administration of a cash indemnity plan.

We are back now reopening negotiations with corporate insurance carriers.

Maine

The question of prepaid medical care in Maine is still far from being settled in spite of hard work and conscientious thinking by more than one committee. Two years ago when the idea of a plan was initiated the Blue Cross refused to write a plan for the Maine Medical Association as a unit, and it insisted on including osteopathic organization. As

RHODE ISLAND MEDICAL JOURNAL

a result the House of Delegates voted not to adopt such a program then.

Within the past year a committee was appointed by the Council to renew the study. In the committee's report to the House of Delegates last June reference is made to three meetings which proved unsuccessful in working out an arrangement with the Blue Cross. As a result the Council recommended to the House of Delegates at the annual meeting in June that the study of prepaid voluntary medical care insurance be continued by another committee to be appointed by the President. It was suggested that such a committee be authorized to take any steps necessary to secure an enabling act which would empower the Maine Medical Association to adopt a representative insurance plan when such can be formulated.

Summary

Enabling legislation to permit the formation of non-profit prepaid voluntary medical-surgical insurance plans has been enacted in each of the New England States except Maine.

Two states — Massachusetts and New Hampshire — already have successful programs in operation. One, Vermont, is soon to offer contracts similar to New Hampshire Physicians Service as the result of an affiliation with that organization similar to the two-state hospitalization service plan.

Two states — Connecticut and Rhode Island — have completed the preliminary details relative to their plans, but have been balked in the inauguration of the service by inability to secure Blue Cross cooperation.

Comment

The potential development of medical-surgical care plans in New England, on the basis of present planning, would offer one of the most interesting studies in the country of this type of insurance. This statement is made in view of the variety of the plans in operation or proposed. For example —

Administration: Three would have Blue Cross as the business organization to merchandise the contract, and would have separate corporations for the medical and the hospital plans. One would have the Blue Cross as the medical service corporation, with one board of directors administering both programs. One, and possibly two, would consider having private commercial insurance companies merchandise the service under approval of the medical society.

Services: Pending disclosure of the details of the plans in process of development it would appear that the services would range from those only in the hospital, to those in hospital, office and home; that surgical care in some instances would be only for hospitalized subscribers, and in others for any services in any location; that only surgical services

continued on page 950



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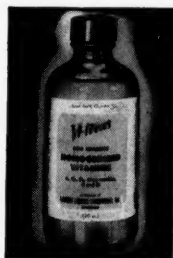
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MEDICAL CARE THROUGH PREPAID INSURANCE

concluded from page 948

would be offered, and that both surgical and medical services would be possible.

Conflicts: Licensure regulations offer another interesting and serious study. In Massachusetts osteopathic physicians can be participating physicians. In New Hampshire, and presumably in the Vermont plan also, they would be paid as non-participating physicians. Rhode Island and Maine will not consider a plan that includes osteopaths.

While it would appear that these varied problems may hinder to some extent the development of the various plans, yet there is reason to feel that the presence of such difficulties will do much to strengthen the entire framework of medical service through insurance programs. The possibility of a successful national contract will depend in great measure upon the general agreement on fundamental principles involved. That New England offers a variety of thinking in its planning is commendable at this stage when every effort should be directed towards a clarification of issues that may be future obstacles to the progress of the extension of medical care.

Possibly the Council of the New England State Medical Societies may be one vehicle by which the thinking throughout the area may be crystallized

RHODE ISLAND MEDICAL JOURNAL

somewhat to pave the way for the inter-state exchange of services for the benefit of the people in this compact section of the nation.

Committee on Medical Care and Prepaid Insurance of the Council of the New England State Medical Societies.

ARTHUR H. RUGGLES, M.D.

MORGAN CUTTS, M.D.

HERMAN C. PITTS, M.D.

(Submitted at a meeting of the Council, at Boston, October 29, 1946)

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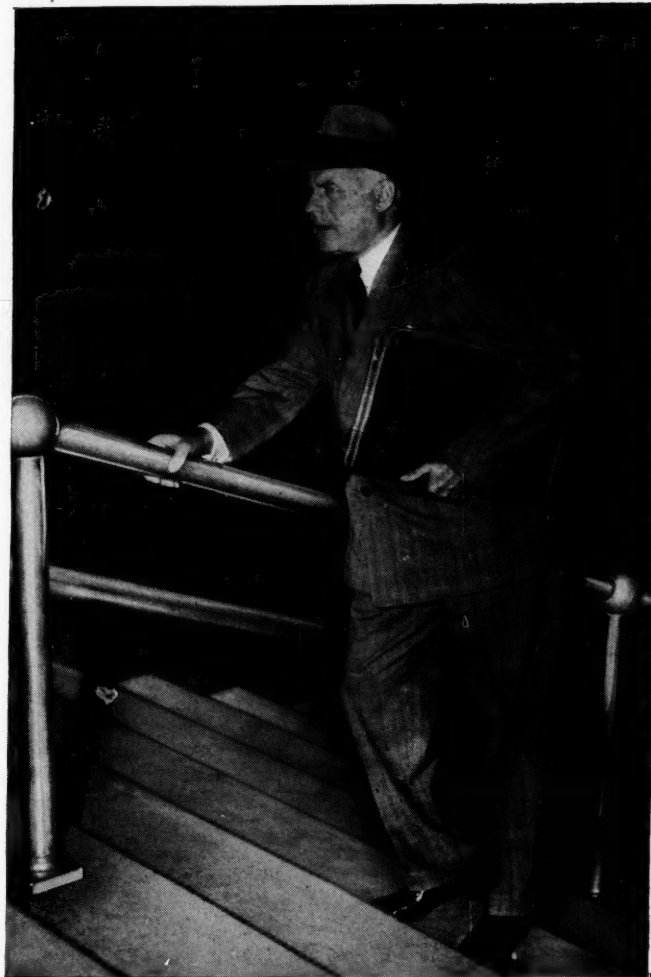
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- who suffers "indigestion" and "gas" on exertion, or after a heavy meal.
- who is stricken with precordial pain on unusual exertion or emotion, or when exposed to cold.

The vasodilatation produced by Erythrol Tetranitrate Merck begins 15 to 20 minutes after administration, and lasts from 3 to 4 hours.

It is generally agreed that the acute attack of anginal pain is most readily relieved by the prompt removal of the provocative factor, and by the use of nitrites. For prophylactic purposes—to control anticipated paroxysms—the delayed but prolonged action of erythrol tetranitrate is effective. Erythrol tetranitrate, because of its slower and more prolonged action, is also considered preferable for the purpose of preventing nocturnal attacks.

ERYTHROL TETRANITRATE MERCK

(ERYTHRITYL TETRANITRATE)

Council



Accepted

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Manufacturing Chemists





Coal

THE threatened coal strike again focuses attention upon the question of the coal miners' Health and Welfare Fund which was established last year as one of the compromising features of the strike called by John L. Lewis.

The present agreement between the United Mine Workers and the government provides for two funds. One, a Welfare and Retirement Fund, created by a five per cent per ton impost on every ton of coal produced, will be administered by three trustees, one appointed by the coal administrator, one by the union, and one to be agreed upon by the coal administrator and John L. Lewis. The second fund is a Medical and Hospital Fund which will be built up by a checkoff from the miners' pay and will be administered by three trustees appointed by the president of the United Mine Workers.

Aside from the implications of these medical funds there are the results of the study that is due to be made known in the coming weeks by the Coal Mine Administration. From this distance we would guess that two features that will be revealed as the result of the study: One will be the great lack of safety devices in the mines (which may be used as an attack against the management of the industry) and the second is the possible indictment of the medical profession in the area of the mining districts for failure to take leadership in providing better or wider distribution of medical services to the miners. Just what will be the reaction when this report is made known is hard to tell, but it is a safe bet that medicine will have to convince its supporters that it can do a better job in providing better medical and hospital services for the miners if it has any hope to sell its own voluntary schemes rather than leave the control of the health and welfare programs to the organized labor groups.

Education

A new technique in health education which will utilize especially prepared films for supplementing

a popular textbook used in college freshman hygiene courses and adult education groups was recently announced by a New York publishing company. Marking its entry into the educational film field this company has started production of a series of seven 16 mm sound motion pictures and a like number of coordinated silent film strips on vital health subjects.

* * * * *

The war-created void in scientific manpower which will take five years or longer to make up the shortage of scientists needed has prompted Dr. Thomas Parran, surgeon general of U. S. Public Health Service, to establish approximately 120 one-year fellowships in medical research that are opened to men and women who are graduate science students. The National Cancer Institute, which operates a division of the National Institute of Health, also has funds to train approximately thirty (30) physicians on the diagnosis and treatment of cancer, according to the surgeon general.

Nursing

Alabama reports progress in the standardization of nursing care on the secondary level as a result of the new law which it has enacted to provide for the examining, licensing and regulating of practical nurses in that state. The responsibility for the administration of the law is delegated to the Nurses Board of Examiners in Registration and an advisory council composed of representatives of the State Board of Health, the State Medical Association, the State Hospital Association, and the State Association of Licensed Practical Nurses, plus a lay member. In pioneering this new movement Alabama has held two-day institutes on practical nursing in the larger cities of the state, and at the present time it has a committee studying standards and policies for the accreditation of schools for practical nurses.

continued on page 954

A balanced formula basis for general infant feeding

FORMULAC Infant Food provides a flexible formula basis for general infant feeding, whether normal or difficult diet cases.

Developed by E. V. McCollum,

FORMULAC is a concentrated milk in liquid form, fortified with all vitamins known to be necessary for adequate infant nutrition. No supplementary vitamin administration is necessary. No carbohydrate has been added to FORMULAC. This permits you to prescribe both the amount and type of carbohydrate supplementation.

An increase in the vitamin D content of FORMULAC from 500

to 800 U.S.P. units not only broadens the margin of safety for normal, healthy babies—but provides additional protection for unusual cases, such as prematures.

Priced within range of even low-income groups, FORMULAC is available at most grocery and drug stores from coast to coast.



• For further information about FORMULAC, and for professional samples, mail a card to National Dairy Products Company, Inc., 230 Park Avenue, New York 17, N. Y.



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New York, N. Y.

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SHELDON BUILDING

5 Registered Pharmacists

THROUGH THE MICROSCOPE

continued from page 952

General Practitioners

With the action of the American Medical Association in establishing a section on the general practice of medicine resulting in subsequent action by the various state medical societies for sections on general practice for their annual meetings, it appears that the swing is towards general medicine, at least for the time being, and away from the intense publicity given to the specialty boards in recent months.

Dr. Orwood Campbell, president of the Hennipen County Medical Society (Minneapolis), remarked significantly in his presidential address recently that in his opinion the general practitioners should have called themselves "The Academy of Family Physicians." Dr. Campbell points that the family is where the general practitioner's real strength lies, as it is there that he can go for support if his existence is ever threatened. In every other respect, according to the doctor, the general practitioner in competition with the specialist is at a disadvantage.

According to Dr. Ray Elledge, president of the Lake County (Indiana) Medical Society, the "general practitioner should fortify his basic training as the years go by. A license to practice medicine should not entitle anyone to ply his profession for life without taking some postgraduate work. The state license should be issued for one year and re-issued only on evidence of satisfactory additional training. By so doing, the quality and dignity of general practice would be enhanced and there would be less need for a great number of specialists."

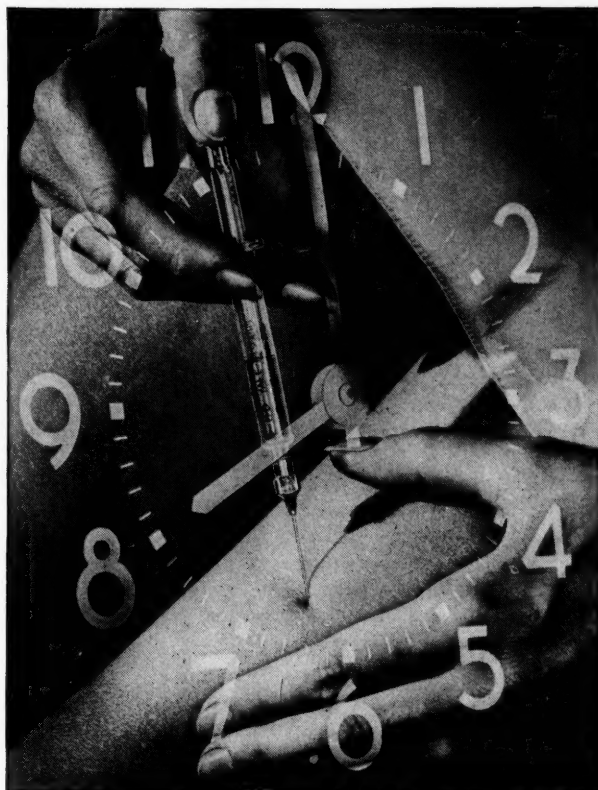
Social Security

The Los Angeles County Medical Association probably has one of the best social security programs for its members that there is in the country for any medical organization. A group of far-sighted members of the Society have worked and planned for several years to establish this security through a Physicians' Aid Association. With some 4,000 members in the Association the committee recently reported that approximately one-fourth had contributed to the permanent fund which now totals \$193,000.

The directors of the Physicians' Aid Association have set a goal of \$500,000 as their minimum total. This money will be used eventually to build a home for destitute practitioners and their dependents, or to establish a fund from which cash relief can be given, or both. None of the fund is now being expended, but with sixty-one persons, including thirty-five physicians, receiving assistance in various ways from the Association it appears that a home will be an outstanding achievement for the Association to establish.

continued on page 956

One-injection control of diabetes



THE LIFE OF MANY DIABETICS, complicated by the need for two, and sometimes three, daily injections of insulin, can be simplified by a change to 'Wellcome' Globin Insulin with Zinc—which, because of its intermediate action, may provide adequate control with *only one injection a day*. This welcomed change-over can be made in three clear-cut steps:

1. THE INITIAL CHANGE-OVER DOSAGE: On the first day, 30 minutes or more before breakfast, give a single dose of 'Wellcome' Globin Insulin with Zinc, equal to 2/3 of the total previous daily dose of regular insulin.

2. ADJUSTMENT TO 24 HOUR CONTROL: Gradually adjust the Globin Insulin dosage to provide 24-hour control as evidenced by a fasting blood sugar level of less than 150 mgm. or sugar-free urine in the fasting sample.

3. ADJUSTMENT OF DIET: Simultaneously adjust

carbohydrate distribution of diet to balance insulin activity; initially 2/10, 4/10 and 4/10. Any midafternoon hypoglycemia may usually be offset by giving 10 to 20 grams of carbohydrate between 3 and 4 p.m. Base final carbohydrate adjustment on fractional urinalyses.

Most mild and many moderately severe cases may be controlled by *one daily injection* of 'Wellcome' Globin Insulin with Zinc, a clear solution comparable to regular insulin in its freedom from allergenic properties. Vials of 10 cc.; 40 and 80 units per cc. Developed in The Wellcome Research Laboratories, Tuckahoe, New York. U.S. Pat. 2,161,198. Literature on request.

'Wellcome' Trademark Registered



BURROUGHS WELLCOME & CO. (U.S.A.) INC., 9 & 11 EAST 41ST STREET, NEW YORK 17, N.Y.

PATHOLOGICAL INSTITUTE AND THE COST OF MEDICAL CARE

concluded from page 933

in the community could be assessed a small amount by his medical society or a committee or some group for this purpose, an arrangement could be made with one of the branch members of the pathological institute, in other words, one of the local hospitals, to accept a yearly amount agreed upon and in turn arrange to do all this so-called office laboratory diagnostic work. The physician in turn should be allowed to charge the patient a small blanket fee so that he or she would not feel that they were becoming charity patients. Many of the state laboratories arrange to do all the tests that a physician may send to it, but, there is no place in so far as I know where this so-called out-patient laboratory service will be taken care of other than the commercial laboratories. To repeat, we all know a large percentage of ills can be taken care of outside of the hospitals, but medicine has advanced so rapidly that each physician must have laboratory aid in a large percentage of his cases. All the plans so far such as Blue Cross, Surgical or Medical Plans, take care of the patient after the patient has been admitted to the hospital and all of these various tests are covered at that time.

Finally, this is not advanced as a panacea but I feel that it opens up a field for further study that should be made along these lines.

RHODE ISLAND MEDICAL JOURNAL THROUGH THE MICROSCOPE

continued from page 954

Legislation

Legislation that must be considered in Rhode Island when the assembly meets in January will be the Health Code which was not brought out of committee in the Senate last year because of the fact that the measure was loosely-drawn. Efforts to affect compromises at meetings during the summer have not been reported as yet. Undoubtedly the legislation must receive very careful consideration by the medical profession and all others interested in health problems in the state if it is to satisfy the Assembly. . . . In New York State the secretaries and legislative representatives of the county medical societies met recently in Albany where they learned that a chiropractic licensure bill similar to that offered unsuccessfully at the last session of the state legislature would probably be introduced and pressed at the 1947 session. It is also predicted that a new bill to ban the use of live dogs in medical research will make its reappearance.

Dentists

From the prewar average number of dental graduates of 1700 per year, the Council on Dental Education of the American Dental Association recently reported that the dental schools in this country graduated 2600 new dentists during the 1945-1946

continued on page 968



Medical Secretaries

Edgewood Medical Secretaries are skilled in laboratory technique, medical stenography and accounting. Interested professional men should phone or write the Placement Office.

Edgewood Secretarial School

FOUNDED 1924

198 Armington Street Edgewood 5, Rhode Island



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Symptoms are often allayed when offending allergens are removed. Prescribe AR-EX Cosmetics —free from known irritants.



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EMIC PROGRAM REACHES MILLION MARK

Somewhere in the United States, on or about Armistice Day, the millionth baby under the Emergency Maternity and Infant Care program was expected to arrive. So figured the Children's Bureau, of the Social Security Administration, Federal Security Agency, which keeps a count of this large lot of servicemen's babies for whom Uncle Sam pays the stork bill. That bill now amounts to almost \$100,000,000.

The Emergency Maternity and Infant Care program, which is now in its fourth year of operation, is administered by State health departments under plans approved by the U. S. Children's Bureau. It is in operation in all the States, the District of Columbia, and Alaska, Hawaii, and Puerto Rico.

Wives and infants under 1 year of men in the four lowest pay grades of the Army, Navy, Coast Guard and Marine Corps are eligible under the program without regard to race or to family circumstances. Care is given even after the serviceman's discharge if the pregnancy occurred, or the infant was under one year of age, while the husband and father was in one of the eligible grades.

In addition to the babies already born under this program, another 100,000 are on their way, the Children's Bureau reported. Maternity care is being given to their mothers. Besides, more than 180,000 of the babies already born have received or are receiving additional medical, hospital, or

nursing care during their first year of life.

This care is now costing Uncle Sam about \$100 for a maternity case and about \$65 for an infant's case. In a few cases with complications, the bill runs to well over \$1,000. The amount paid covers the cost of good maternity care, including prenatal care, delivery, and care for six weeks after the baby's birth. Doctor, hospital, and nurses' bills are all paid, including those for consultation and laboratory services at rates established under each State plan. Similarly, the medical and hospital bills are paid for the care of a sick baby.

At one time Uncle Sam was paying the stork bill for one out of every seven babies born in the United States. Between 40,000 and 45,000 maternity and infant cases were being authorized a month. Now the total of authorization averages about 15,000 a month.

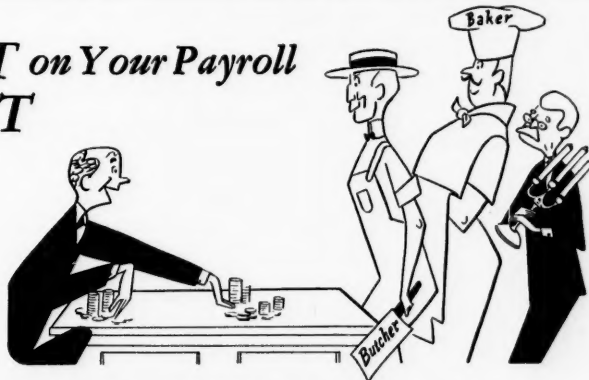
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*Estimated Number of Births under the EMIC Program
from Beginning of program to November 11, 1946,
for the New England States.*

State	Rank in No. of Births Under Program	Estimate to November 11, 1946	Date of Approval of State Plan
11	Massachusetts	27,400	August, 1943
32	Connecticut	11,100	May, 1943
38	Maine	6,500	May, 1943
41	Rhode Island	5,200	April, 1943
45	New Hampshire	3,500	June, 1943
47	Vermont	2,800	April, 1943
Estimated total		56,500	

Put Yourself **FIRST** on Your Payroll instead of **LAST**

*How to Have
Income for the
Rest of Your Life*



When you sit down to take care of your monthly bills, the butcher, the baker, the candlestick maker, each gets what's coming to him — but are you equally careful about setting aside something for yourself and your family?

Too many of us devote our income to meeting present and past expenses, and save only if there's something left over.

But why put yourself last on the list? Make a definite program for the future a regular part of your budget.

Read about The Connecticut Mutual's Retirement Income plan which enables you to enjoy real peace of mind. Let us send you a copy of our booklet, "What Is the Retirement Income Plan?"

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The only
vasoconstrictor-sulfonamide
which contains Micraform

Micraform sulfathiazole crystals are extremely minute—approximately 1/1000 the mass of ordinary crystals.

Because Paredrine-Sulfathiazole Suspension contains these minute Micraform crystals, it does not cake or clump, and does not inhibit normal ciliary action. (See the clinical drawings on the opposite page.)

Moreover, when ciliary action is impaired by infection, the Suspension's Micraform sulfathiazole spreads in a fine, even film over the affected mucosa, where it establishes bacteriostasis which often lasts for hours.

Rhinitis . . . Sinusitis . . . Nasopharyngitis . . . Pharyngitis

Paredrine-
Sulfathiazole
Suspension *Vasoconstriction in minutes*
. . . Bacteriostasis for hours

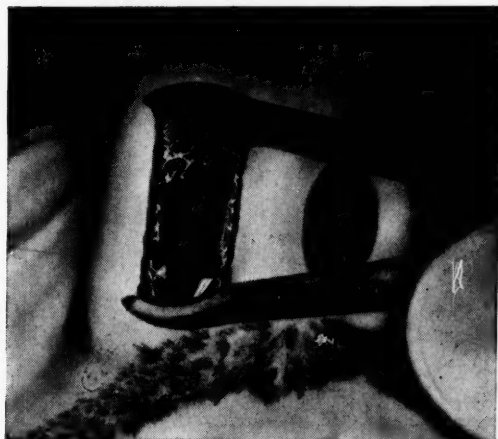
No ciliary inhibition . . .

No caking . . . No clumping

sulfathiazole



- Five minutes after instillation of Paredrine-Sulfathiazole Suspension in a convalescent nose, the cilia are already forming streams of Microform sulfathiazole.



- 35 minutes later, the cilia have swept almost all the sulfathiazole away. There is no caking or clumping on *ciliated* epithelium. A few crystals, dried by inspired air, still adhere to the *non-ciliated* anterior borders of the turbinates and to the vibrissae.

Smith, Kline & French Laboratories
Philadelphia, Pa.

MEDICAL LIBRARY NEWS

NEW BOOKS

The Librarian of the Rhode Island Medical Society Library announces the recent addition of the following books:

DAVENPORT COLLECTION

John F. Fulton—*Harvey Cushing*. A biography. Springfield, 1946.

Mary S. Gardner—*Katharine Kent*. N. Y., 1946.

Mary L. McDonough — *Poet Physicians*. Springfield, 1945.

Jane M. Oppenheimer—*New Aspects of John and William Hunter*. N. Y., 1946.

ALLERGY

Erich Urbach & Philip M. Gottlieb—*Allergy*. 2nd ed. N. Y., 1946.

BLOOD TRANSFUSION

American Red Cross Blood Donor Service during World War II. Its Organization and Operation. Wash., 1946.

MEDICINE, history

Douglas Guthrie—*A History of Medicine*. Phil., 1946.

MYCOLOGY

Norman F. Conant & others—*Manual of Clinical Mycology*. Phil., 1944.

PHARMACY

Council on Pharmacy and Chemistry, A.M.A.—*New and Non-official Remedies*, 1946. Chic., 1946.

Reports for 1945. Chic., 1946.

TROPICAL MEDICINE

Thomas T. Mackie & others—*Manual of Tropical Medicine*. Phil., 1945.

GIFTS of journals, pamphlets and books from Doctors Harlan P. Abbott, Helen C. Putnam, and Joseph Smith and from the Mead Johnson Company.

WYETH PRESENTS PAINTINGS

The Board of Trustees acknowledges with appreciation the gift from the Wyeth & Company of Philadelphia of five framed reproductions of paint-

ings well-known to physicians. These reproductions have been hung in the Library dining room where they may be viewed by members of the Society. The group paintings by Dean Cornwell consists of the following: "The Father of American Pharmacy—William Proctor, Jr., 1817-1872"; "Beaumont and St. Martin"; "That Mothers Might Live", Oliver Wendell Holmes, 1809-1894; "The Dawn of Abdominal Surgery"; and "Osler at Old Blockley."

* * * * *

The Mead Johnson Company will again run its art exhibition at the AMA meeting at Atlantic City. Cups and medals are the rewards, and also \$34,000 in savings bonds for the special contest, "Courage and Devotion Beyond the Call of Duty" (in war and in peace). For complete information write the sponsor, Mead Johnson & Company, Evansville 21, Indiana.

CHARLES F. GORMLY COLLECTION

Seven books have been purchased with money from the Charles F. Gormly Fund. This is the beginning of a collection of texts on medico-legal and allied subjects in memory of Doctor Gormly.

David Abrahamsen—*Crime and the human mind*. N. Y., 1944.

John Glaister—*Medical Jurisprudence and Toxicology*. 8th ed. Edin., 1945.

Alice Hamilton & Rutherford T. Johnstone—*Industrial Toxicology*. N. Y., 1945.

Emanuel Hayt & Lillian R. Hayt—*Legal Guide for American Hospitals*. N. Y., 1940.

Samuel B. Horovitz—*Injury and Death under Workmen's Compensation Laws*. Bost., 1944.

Earl D. McBride—*Disability Evaluation*. 3rd ed. Phil., 1942.

William D. McNally—*Medical Jurisprudence and Toxicology*. Phil., 1939.

New . . . ORAL AMINO ACIDS

AMIPROTE contains all amino acids from 4 of the most important proteins of high biologic value, for *more complete* therapy. High nitrogen content, small bulk; a practical and efficient means of raising protein intake. Exceptional palatability encourages sustained patient cooperation.

Exceptionally Palatable AMIPROTE

PROTEIN HYDROLYSATE COMPOUND

AMIPROTE is an enzyme digest of four excellent nutritional proteins: Beef, Casein, Lactalbumin, and Yeast . . . providing:

PROTEIN HYDROLYSATES	65%
(70% Amino Acids and Peptides)	
PROTEIN (Unhydrolysed)	5%
CARBOHYDRATES	30%
Total protein (N x 6.25)	50%

4 SUPERIOR SOURCES OF AMINO ACIDS

- BEEF
- CASEIN
- YEAST
- LACTALBUMIN



Administered in water, milk, broth, fruit juices, cereals, puddings and custards.

Bottles of 6 ounces (powder)

Literature on Request

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NEW ENGLAND'S SCORE CARD IN THE NATIONAL ECONOMY

Prepared by the NEW ENGLAND COUNCIL

IN our concern for the economic progress and welfare of New England, it is important to know how our region stands in comparison with the United States as a whole. This is clearly shown in the tables below with respect to numerous important factors in our economy. For example, the population density of New England is 134 per square mile, while for all the United States it is but 44. The proportion of industrial employment in the United States is 23%, in New England it is 38%. These are accurate measures of the extent to which New England is more densely populated and more highly industrialized than the country as a whole. To emphasize New England's relative position the New England figures that are higher than the national figures are printed in bold-faced type.

AREA

66,608 Square Miles

N. E. 2.2% U. S. Total

	NE	US
Total area, percent in lakes and streams	5.1%	1.5%
Land area, percent in forest and woodland	74%	33%
Land area, percent in farms	33%	56%
Farm land, percent available for crops	39%	50%

PEOPLE

Population 1940 8,437,290

N. E. 6.4% U. S. Total

	NE	US
Population, number of people per square mile	134	44
Population, percent living in urban areas	76%	57%
Population, percent living in rural areas	24%	44%
Population, percent foreign born white	18%	8.7%
Population, percent under 5 years of age	6.8%	8.0%
Population, percent over 65 years of age	8.5%	6.9%
Births per thousand persons	16	18
Deaths per thousand persons	12	11
Marriages per thousand persons	11	12
Divorces per thousand persons	1.2%	2.0%

EMPLOYMENT

Total Number Employed 3,231,235

N. E. 6.8% U. S. Total

	NE	US
Population, percent of total number employed	38%	36%

Percent of total employment accounted for by:

Manufacturing	38%	23%
Agriculture	4.6%	19%
Forestry, fishing and mining	0.5%	2.2%
Wholesale and retail trade	17%	17%
Construction	4.6%	4.5%
Transportation, communication, utilities	5.9%	6.9%
Finance, services, etc.	29%	28%

MANUFACTURING

Value of Products \$4,891,666

N. E. 8.6% U. S. Total

	NE	US
All manufactured products, value per capita	\$580	\$432
Foods products, value per capita	\$ 51	\$ 81
Textile and fiber products, value per capita	\$126	\$ 30
Apparel and fabric products, value per capita	\$ 26	\$ 25
Wood and wood products, value per capita	\$ 15	\$ 18
Paper prod., publishing, printing, value per capita	\$ 60	\$ 35
Chemicals and allied products, value per capita	\$ 22	\$ 28
Rubber products, value per capita	\$ 14	\$ 7
Leather and leather products, value per capita	\$ 51	\$ 11
Stone, clay and glass products, value per capita	\$ 9	\$ 11
Iron and steel products, value per capita	\$ 44	\$ 50
Nonferrous metal products, value per capita	\$ 40	\$ 20
Electrical equipment, value per capita	\$ 30	\$ 13
Machinery, value per capita	\$ 43	\$ 25
Automobiles and equipment, value per capita	\$ 3	\$ 31
Other transportation equipment, value per capita	\$ 16	\$ 6
Other products, value per capita	\$ 29	\$ 41
Value of manufactured products per wage earner	\$5130	\$7207
Value added by manufacture, per wage earner	\$2546	\$3130
Plants, less than 5 employees, % of total	40%	46%
Plants, over 500 employees, % of total	2.0%	1.2%

AGRICULTURE

Value of Products \$236,200,000

N. E. 3.0% U. S. Total

	NE	US
Agricultural products, value per capita	\$ 28	\$ 59
Average acreage per farm	99	174
Average value per acre, land and buildings	\$ 55	\$ 32

continued on page 966

SUBJECT: "YOUR DOCTOR"

AUDIENCE: 23 MILLION PEOPLE

This is the 200th message published by Parke, Davis & Company in the interest of the medical profession. It appears this month in full color in LIFE and other leading national magazines.

Some things you should know about your doctor

No. 200 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.



In times of distress, almost everyone turns to his doctor. But when things are going smoothly, some people are apt to take him pretty much for granted.

However, if you consider your doctor's service to you and to the country—if you consider the skills he must have, the sacrifices he must make, the hardships he must work under—then it isn't very easy to take him for granted.

To become a doctor usually requires three to four years of pre-medical education, four years of medical school, and another year or more as an interne. But this by no means represents the end of his training.

Do you realize how much time your doctor has to spend in continuing study—so he can bring you the benefits of all the latest medical advances?

During a year the average American doctor devotes the equivalent of about a month to the study of medical books and journals and to attending medical meetings.

It's an old story about how many patients a doctor has to see every day, how much of his time he devotes to charity, how many calls he has to make in the middle of the night. But did you ever think of it this way:

When you leave your office or job, the chances are that you're free from business duties for another day. You can do whatever you feel like—you can dig in your garden, visit friends, have a quiet evening at home with your family, drop in at a movie, or go for a drive. But your doctor's work is never finished. He's always—every waking and sleeping moment—responsible for the patients under his care.

Yes, it takes a lot of things to be a good doctor. It takes physical and nervous stamina. It takes patience. It takes great tact. It takes an understanding of people. It takes sound judgment. It takes unusual scientific and scholastic aptitude. It takes a sympathy for the unfortunate. Above all, it takes a spirit of humanitarianism and a sense of service.

Tall order, isn't it? Yet thousands and thousands of American physicians have all these qualities—and more. They are outstanding men and women. America should never cease to be proud of them.

PARKE, DAVIS & CO.

Research and Manufacturing Laboratories • Detroit 22, Michigan

Makers of medicines prescribed by physicians

N. E. SCORE CARD IN THE NATIONAL ECONOMY

concluded from page 964

Average tax per acre (Owner-operated farms)	\$ 1.13	\$ 0.52
Owner-operated farms, percent of total number	91%	61%
Farm production, gallons of milk per cow	610	525
Farm production, eggs per laying hen	182	142
Farm production, potatoes per acre (bushels)	239	132

FORESTRY, MINING AND FISHING

	NE	US
Lumber produced (board feet) per capita	72	220
Wood pulp produced (pounds) per capita	308	134
Mineral products, value per capita	\$2.95	\$35
Fisheries products, value per capita	\$2.43	\$ 0.67

SERVICE INDUSTRIES

Trade, Construction, Transportation, Utilities

	NE	US
Wholesale sales per capita	\$376	\$420
Retail sales per capita	\$393	\$319
Postal receipts per capita	\$ 6.40	\$ 5.51
Service establishment receipts per capita	\$ 28	\$ 26
Construction contracts, value per capita	\$ 38	\$ 30
Railroad mileage per 1000 square miles	100	77
Airports per 1000 square miles	15	8
Rural highways, percent surfaced	58%	41%
Telephones per 1000 persons	183	139
Power production, KWH per capita	1063	1101

FINANCE AND TAXATION

	NE	US
Income payments to individuals 1940	\$725	\$575
Income payments to individuals 1945	\$1288	\$1150
Bank deposits per capita	\$835	\$537
Savings deposits per capita	\$527	\$196
Life insurance in force per capita	\$1107	\$877
Individual income tax, average per return	\$123	\$118
State revenue per capita	\$ 42	\$ 39
State expenditures per capita	\$ 38	\$ 35

EDUCATION

	NE	US
Children, percent in public schools	67%	73%
Children, percent in private schools	16%	7.5%
Number of school children per teacher	29	28
School expenditures per capita of enrollment	\$103	\$ 92
Average salary of public school teachers	\$1748	\$1441
College plants, average value (\$000)	\$2077	\$1612
College endowments, average value (\$000)	\$3217	\$987

HOUSING

	NE	US
Dwelling units, percent in urban areas	72%	58%

RHODE ISLAND MEDICAL JOURNAL

Dwelling units, percent in rural areas	5.4%	19%
Dwelling units, percent held for seasonal use	5.2%	2.0%
Dwelling units, percent substandard	5.7%	14%
Urban dwelling units, percent owner occupied	35%	38%
Rural-nonfarm units, percent owner occupied	57%	52%
Rural-farm units, percent owner occupied	82%	53%
Median value, urban and rural-nonfarm units	\$3652	\$2938
Median rent, urban and rural-nonfarm units	\$ 26	\$ 24

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Vitamin D (Irradiated Ergosterol)	50,000 U.S.P. Units
Vitamin A (Fish-Liver Oil)	5,000 U.S.P. Units
Ascorbic Acid	75 mg.
Thiamine Hydrochloride	3 mg.
Riboflavin	2 mg.
Pyridoxine Hydrochloride	0.3 mg.
Calcium Pantothenate	1 mg.
Niacinamide	15 mg.
Mixed Natural Tocopherols	3.4 mg.
(Equivalent in biological activity to 3 mg. of Alpha Tocopherol)	

Through the pharmacodynamic and nutritional actions of its nine constituents, Dartchronol not only exerts a beneficial influence on the typical involvement of the locomotor structures, but in addition is of value in the control of many systemic disturbances frequently encountered in the arthritic syndrome.

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THROUGH THE MICROSCOPE

continued from page 956

school year, making the second largest in the recent history of the profession and reflecting the accelerated training program adopted by dental colleges during the war years.

Although the number of graduates increased during the war years, enrollments of beginning dental students dropped sharply due to manpower demands of the armed forces. As a result there will be smaller graduating classes during the next two to three years. However, this will be partially offset later when the present freshmen enrollment at the nation's forty dental schools, now in excess of 3,000 students of whom 90 per cent are veterans of World War II, complete their training.

* * * * *

The 1947 full scale scientific meeting of the American Dental Association will be held in Boston next year, the first or second week in August, according to present plans.

Meetings

It is not too early to start planning for your attendance at the centennial meeting of the American Medical Association to be held at Atlantic City June 9-13. Hotel reservations should be made far in advance as undoubtedly this meeting will draw the largest attendance in the history of the Association.

Incidentally, only Fellows and invited guests are eligible to attend the meeting. Membership in your state society is the primary qualification for Fellowship in the AMA. Fellowship dues and subscription to the Journal of the AMA are both included in one annual payment of \$8.00 which is the cost of the Journal to subscribers who are not Fellows.

* * * * *

The American Urological Association again offers an annual award, not to exceed \$500, for an essay on the result of some clinical or laboratory research in urology. For full particulars write to the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before May 1, 1947.

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